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DEATH OF SIR HUGH WILLOUGHBY.

Published by Longman Hurst, Rees & Orme, 1808.

A

GENERAL COLLECTION

OF THE

BEST AND MOST INTERESTING

VOYAGES AND TRAVELS

IN ALL PARTS OF THE WORLD;

MANY OF WHICH ARE NOW FIRST TRANSLATED INTO ENGLISH.

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DIGESTED ON A NEW PLAN.

BY JOHN PINKERTON,

AUTHOR OF MODERN GEOGRAPHY, &c. &c.

ILLUSTRATED WITH PLATES.

VOLUME THE FIRST.

LONDON:

PRINTED FOR LONGMAN, HURST, REES, AND ORME, PATERNOSTER-ROW;
AND CADELL AND DAVIES, IN THE STRAND.

1808.

ADVERTISEMENT.

THE firſt ſix volumes of a new General Collection of Voyages and Travels, compriſing the Narratives of the European Travellers, are now ſubmitted to the Public. The Plan of the Editor's Syſtem of Geography has been followed, as far as was conſiſtent with the different nature of the preſent Work. In ſeveral Collections of this kind, it has happened that the Voyages and Travels in Europe, by being reſerved to the laſt, have been either omitted, or given in ſmall detached portions. The arrangement here adopted has at leaſt ſupplied that defect, without hazarding a ſimilar imperfection in relation to any other quarter of the globe.

The diſcovery of a direct maritime intercourſe with the great empire of Ruſſia, and the conſequent extenſion of commerce and navigation, being juſtly regarded by hiſtorians as the firſt dawn of the wealth and naval preponderance of England, it has attracted the firſt attention in a national collection. This diſcovery, the moſt intereſting among thoſe of Modern Europe, is naturally followed by the beſt deſcriptions of the other countries ſituated in the extremities of that part of the world, ſo as to preſent for the firſt time, a connected proſpect of thoſe remote regions, ſo intereſting to the imagination from the peculiarities of their poſition and climate, and of the life and manners of the inhabitants.

Having thus ſurveyed the boundaries of Europe, the united kingdom of Great Britain and Ireland has been conſidered, for the reaſons detailed in the Editor's Modern Geography, as holding out the next claim to notice. After this have been placed the deſcriptions of France, Italy, Spain, and other countries in the ſouth of Europe, which are followed by the beſt accounts of Germany, Denmark, Norway, Sweden and Ruſſia, with the other northern diſtricts, thus completing the ſeries of Voyages and Travels relating to this important quarter of the world. As, however, this work is intended for the general reader, a brief account of the ancient Voyages and Travels which led the Phœnicians, Greeks and Romans, to what may be

called the diſcovery of the diſtant European countries, will, with other introductory matter at preſent neceſſarily deferred, be given in the laſt volume.

The next diviſion of this Collection will contain the account of travellers that relate to Aſia, which will alſo be publiſhed ſeparately as ſoon as it can be completed, without waiting for the regular courſe of monthly delivery. The remainder of the work, containing the deſcriptions of Africa and America, will be brought forward in ſimilar detached portions, for the accommodation of Perſons who may prefer this mode of publication. The publication in monthly parts will, however, be continued as before.

In a work of this deſcription it muſt always be difficult, at its commencement, to eſtimate, with any certainty, the extent to which it may proceed. This difficulty the Editor and Publiſhers have felt in the preſent undertaking. In their Proſpectus they expreſſed a hope that their Collection might be compriſed in ten or twelve Volumes; but they now find, from the vaſt maſs of valuable materials, which have offered themſelves for ſelection, that they cannot, without injuring the utility and intereſt of their Work, by the omiſſion of ſome, and the abridgement of other important documents, calculate upon completing it in leſs than ſixteen Volumes. They announce this with the leſs regret, on account of the general approbation with which their Plan has been received.

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A

GENERAL COLLECTION

OF

VOYAGES AND TRAVELS.

THE VOYAGES OF SIR HUGH WILLOUGHBY, RICHARD CHANCELOR AND OTHERS, TO THE NORTHERN PARTS OF RUSSIA AND SIBERIA.

(From HAKLUYT's Collection, Vol. I. p. 226.)

THESE intereſting Voyages are introduced with a genealogy of the dukes of Moscovy, which being extraneous to the ſubject, and often erroneous, ſhall be here omitted. But the inſtructions of Sebaſtian Cabot deſerve preſervation, on account of their curioſity, and the celebrity of the author, not to mention that the firſt Engliſh voyage of diſcovery deſerves to be detailed with all its circumſtances; and in a plan of this extent the Gothic building may ſometimes form an agreeable variety amidſt modern edifices.

Ordinances, inſtructions, and advertiſements of and for the direction of the intended voyage for Cathay, compiled, made, and delivered by the right worſhipful M. Sebaſtian Cabota, eſquire, governor of the myſtery and company of the merchants adventurers for the diſcovery of regions, dominions, iſlands, and places unknown, the 9th day of May, in the year of our Lord God 1553, *and in the 7th year of the reign of our moſt dread ſovereign lord, Edward the Sixth, by the grace of God, king of England, France, and Ireland, defender of the faith, and of the church of England and Ireland, in earth ſupreme head.*

Firſt, the captain-general, with the pilot-major, the maſters, merchants, and other officers, to be ſo knit and accorded in unity, love, conformity, and obedience in every degree on all ſides, that no diſſention, variance, or contention may riſe or ſpring betwixt them and the mariners of this company, to the damage or hindrance of the voyage; for that diſſention (by many experiences) hath overthrown many notable intended, and likely enterpriſes and exploits.

2. Item, for as much as every perſon hath given an oath to be true, faithful, and loyal ſubjects, and liegemen to the king's moſt excellent majeſty, his heirs and ſucceſſors, and for the obſervation of all laws and ſtatutes, made for the preſervation of his moſt excellent majeſty, and his crown imperial of his realms of England and Ireland,

and to ſerve his grace, the realm, and this preſent voyage truly, and not to give up, intermit, or leave off the ſame voyage and enterpriſe until it ſhall be accompliſhed, ſo far forth as poſſibility and life of man may ſerve or extend: therefore it behoveth every perſon in his degree, as well for conſcience as for duty's ſake, to remember his ſaid charge, and the accompliſhment thereof.

3. Item, where furthermore every mariner or paſſenger in his ſhip hath given like oath to be obedient to the captain-general, and to every captain and maſter in his ſhip, for the obſervation of theſe preſent orders contained in this book, and all other which hereafter ſhall be made by the twelve counſellors in this preſent book named, or the moſt part of them, for the better conduction and preſervation of the fleet, and atchieving of the voyage, and to be prompt, ready, and obedient in all acts and feats of honeſty, reaſon, and duty, to be miniſtered, ſhewed, and executed, in advancement and preferment of the voyage and exploit: therefore it is convenient that this preſent book ſhall once every week (by the diſcretion of the captain) be read to the ſaid company, to the intent that every man may the better remember his oath, conſcience, duty, and charge.

4. Item, every perſon, by virtue of his oath, to do effectually, and with good will (as far forth as him ſhall comply), all and every ſuch act and acts, deed and deeds, as ſhall be to him or them from time to time commanded, committed, and enjoined (during the voyage) by the captain-general, with the aſſent of the counſel and aſſiſtants, as well in and during the whole navigation and voyage, as alſo in diſcovering and landing, as caſes and occaſions ſhall require.

5. Item, all courſes in navigation to be ſet and kept, by the advice of the captain, pilot-major, maſters, and maſters' mates, with the aſſents of the counſellors and the moſt number of them, and in voices uniformly agreeing in one, to prevail, and take place, ſo that the captain-general ſhall in all counſels and aſſemblies have a double voice.

6. Item, that the fleet ſhall keep together, and not ſeparate themſelves aſunder, as much as by wind and weather may be done or permitted, and that the captains, pilots, and maſters ſhall ſpeedily come aboard the admiral, when and as often as he ſhall ſeem to have juſt cauſe to aſſemble them for counſel or conſultation to be had concerning the affairs of the fleet and voyage.

7. Item, that the merchants and other ſkilful perſons in writing ſhall daily write, deſcribe, and put in memory the navigation of every day and night, with the points, and obſervation of the lands, tides, elements, altitude of the ſun, courſe of the moon and ſtars, and the ſame ſo noted, by the order of the maſter and pilot of every ſhip, to be put in writing, the captain-general aſſembling the maſters together once every week (if wind and weather ſhall ſerve), to confer all the obſervations and notes of the ſaid ſhips, to the intent it may appear wherein the notes do agree, and wherein they diſſent, and upon good debatement, deliberation, and concluſion determined, to put the ſame into a common ledger, to remain of record for the company: the like order to be kept in proportioning of the cards, aſtrolabes, and other inſtruments prepared for the voyage at the charge of the company.

8. Item, that all enterpriſes and exploits of diſcovering or landing to ſearch iſles, regions, and ſuch like, to be ſearched, attempted, and enterpriſed, by good deliberation, and common aſſent, determined adviſedly. And that in all enterpriſes, notable ambaſſages, ſuits, requeſts, or preſentment of gifts or preſents to princes, to be done and executed by the captain-general in perſon, or by ſuch other as he by common aſſent ſhall appoint or aſſign to do, or cauſe to be done, in the ſame.

9. Item,

9. Item, the ſteward and cook of every ſhip, and their aſſociates, to give and render to the captain and other head officers of their ſhip weekly (or oftener if it ſhall ſeem requiſite), a juſt or plain and perfect accompt of expences of the victuals, as well fleſh, fiſh, biſcuit, meat or bread, as alſo of beer, wine, oil or vinegar, and all other kind of victualling under their charge, and they, and every of them, ſo to order and diſpend the ſame, that no waſte or unprofitable exceſs be made otherwiſe than reaſon and neceſſity ſhall command.

10. Item, when any inferior or mean officer, of what degree or condition he ſhall be, ſhall be tried untrue, remiſs, negligent, or unprofitable in or about his office in the voyage, or not to uſe himſelf in his charge accordingly, then every ſuch officer to be puniſhed or removed at the diſcretion of the captain and aſſiſtants, or the moſt part of them, and the perſon ſo removed not to be reputed, accepted, or taken from the time of his remove any more for an officer, but to remain in ſuch condition and place as he ſhall be aſſigned unto, and none of the company to reſiſt ſuch chaſtiſement or worthy puniſhment as ſhall be miniſtered to him moderately, according to the fault or deſert of his offence, after the laws and common cuſtoms of the ſeas, in ſuch caſes heretofore uſed and obſerved.

11. Item, if any mariner or officer inferior ſhall be found by his labour not meet nor worthy the place that he is preſently ſhipped for, ſuch perſon may be unſhipped and put on land at any place within the king's majeſty's realm and dominion, and one other perſon more able and worthy to be put in his place, at the diſcretion of the captain and maſters, and order to be taken that the party diſmiſſed ſhall be allowed proportionably the value of that he ſhall have deſerved to the time of his diſmiſſion or diſcharge, and he to give order with ſureties, pawn, or other aſſurance, to repay the overplus of that he ſhall have received, which he ſhall not have deſerved, and ſuch wages to be made with the party newly placed as ſhall be thought reaſonable, and he to have the furniture of all ſuch neceſſaries as were prepared for the party diſmiſſed, according to right and conſcience.

12. Item, that no blaſpheming of God, or deteſtable ſwearing, be uſed in any ſhip, nor communication of ribaldry, filthy tales, or ungodly talk, to be ſuffered in the company of any ſhip, neither dicing, carding, tabling, nor other deviliſh games to be frequented, whereby enſueth not only poverty to the players, but alſo ſtrife, variance, brawling, fighting, and oftentimes murder, to the utter deſtruction of the parties, and provoking of God's moſt juſt wrath and ſword of vengeance. Theſe and all ſuch like peſtilences, and contagions of vices and ſins to be eſchewed, and the offenders once moniſhed, and not reforming, to be puniſhed at the diſcretion of the captain and maſter, as appertaineth.

13. Item, that morning and evening prayer, with other common ſervices appointed by the king's majeſty and laws of this realm, to be read and ſaid in every ſhip daily by the miniſter in the admiral, and the merchant or ſome other perſon learned in other ſhips, and the Bible or paraphraſes to be read devoutly and chriſtianly, to God's honour, and for his grace to be obtained and had by humble and hearty prayer of the navigants accordingly.

14. Item, that every officer is to be charged by inventory with the particulars of his charge, and to render a perfect accompt of the defraying of the ſame, together with modeſt and temperate diſpending of powder, ſhot, and uſe of all kind of artillery, which is not to be miſuſed, but diligently to be preſerved for the neceſſary defence of the fleet and voyage, together with due keeping of all inſtruments of your navigation, and other requiſites.

15. Item, no liquor to be ſpilt on the ballaſt, nor filthineſs to be left within board; the cook-room and all other places to be kept clean, for the better health of the company; the gromals and pages to be brought up according to the laudable order and uſe of the ſea, as well in learning of navigation, as in exerciſing of that which to them appertaineth.

16. Item, the liveries in apparel given to the mariners be to be kept by the merchants, and not to be worn, but by the order of the captain, when he ſhall ſee cauſe to muſter or ſhew them in good array, for the advancement and honour of the voyage, and the liveries to be re-delivered to the keeping of the merchants, until it ſhall be thought convenient for every perſon to have the full uſe of his garment.

17. Item, when any mariner or any other paſſenger ſhall have need of any neceſſary furniture of apparel for his body, and conſervation of his health, the ſame ſhall be delivered him by the merchant, at the aſſignment of the captain and maſter of that ſhip, wherein ſuch needy perſon ſhall be, at ſuch reaſonable price as the ſame coſt, without any gain to be exacted by the merchants, the value thereof to be entered by the merchant in his book, and the ſame to be diſcounted off the party's wages that ſo ſhall receive and wear the ſame.

18. Item, the ſick, diſeaſed, weak, and viſited perſon within board, to be tendered, relieved, comforted, and helped, in the time of his infirmity; and every manner of perſon, without reſpect, to bear another's burthen, and no man to refuſe ſuch labour as ſhall be put to him, for the moſt benefit and public wealth of the voyage and enterpriſe to be atchieved exactly.

19. Item, if any perſon ſhall fortune to die, or miſcarry in the voyage, ſuch apparel and other goods, as he ſhall have at the time of his death, is to be kept by the order of the captain and maſter of the ſhip, and an inventory to be made of it, and conſerved to the uſe of his wife and children, or otherwiſe according to his mind and will, and the day of his death to be entered in the merchant's and ſteward's books, to the intent it may be known what wages he ſhall have deſerved to his death, and what ſhall reſt due to him.

20. Item, that the merchants appointed for this preſent voyage ſhall not make any ſhew or ſale of any kind of merchandiſes, or open their commodities to any foreign princes, or any of their ſubjects, without the conſent, privity, or agreement of the captains, the cape merchants, and the aſſiſtants, or four of them, whereof the captain-general, the pilot-major, and cape merchant to be three, and every of the petty merchants to ſhew his reckoning to the cape merchant, when they or any of them ſhall be required: and no commutation or truck to be made by any of the petty merchants, without the aſſent aboveſaid: and all wares and commodities trucked, bought, or given to the company by way of merchandiſe, truck, or any other reſpect, to be booked by the merchants, and to be well ordered, packed, and conſerved in one maſs entirely, and not to be broken or altered, until the ſhip ſhall return, to the right diſcharges, and inventory of all goods, wares, and merchandiſes ſo trucked, bought, or otherwiſe diſpended, to be preſented to the governor, conſuls, and aſſiſtants in London, in good order, to the intent the king's majeſty may be truly anſwered of that which to his grace by his grant of corporations is limited, according to our moſt bound duties, and the whole company alſo to have that which by right unto them appertaineth, and no embezzlement ſhall be uſed, but the truth of the whole voyage to be opened, to the commonwealth and benefit of the whole company and myſtery, as appertaineth, without guile, fraud, or mal engine.

21. Item, no particular perſon, to hinder or prejudicate the common ſtock of the company, in ſale or preferment of his own proper wares and things, and no particular emer-

emergent or purchaſe to be employed to any ſeveral profit, until the common ſtock of the company ſhall be furniſhed, and no perſon to hinder the common benefit in ſuch purchaſes or contingents, as ſhall fortune to any one of them, by his own proper policy, induſtry, or chance, nor no contention to riſe in that behalf, by any occaſion of jewel, ſtones, pearls, precious metals, or other things of the region, where it ſhall chance the ſame to riſe, or to be found, bought, trucked, permuted, or given: but every perſon to be bound in ſuch caſe and upon ſuch occaſion, by order and direction, as the general captain, and the council ſhall eſtabliſh and determine, to whoſe order and diſcretion the ſame is left: for that of things uncertain, no certain rules may or can be given.

22. Item, not to diſcloſe to any nation the ſtate of our religion, but to paſs it over in ſilence, without any declaration of it, ſeeming to bear with ſuch laws and rites as the place hath, where you ſhall arrive.

23. Item, for as much as our people and ſhips may appear unto them ſtrange and wonderous, and theirs alſo to ours, it is to be conſidered, how they may be uſed, learning much of their natures and diſpoſitions, by ſome one ſuch perſon, as you may firſt either allure, or take to be brought aboard your ſhips, and there to learn as you may, without violence or force; and no woman to be tempted or entreated to incontinence, or diſhoneſty.

24. Item, the perſon ſo taken, to be well entertained, uſed, and apparelled, to be ſet on land, to the intent that he or ſhe may allure others to draw nigh to ſhew the commodities: and if the perſon taken may be made drunk with your beer, or wine, you ſhall know the ſecrets of his heart.

25. Item, our people may not paſs farther into a land, than that they may be able to recover their pinnaces, or ſhips, and not to credit the fair words of the ſtrange people, which be many times tried ſubtle, and falſe, nor to be drawn into peril of loſs, for the deſire of gold, ſilver, or riches, and eſteem your own commodities above all other, and in countenance ſhew not much to deſire the foreign commodities: nevertheleſs take them as for friendſhip, or by way of permutation.

26. Item, every nation and region is to be conſidered adviſedly, and not to provoke them by any diſdain, laughing, contempt, or ſuch like, but to uſe them with prudent circumſpection, with all gentleneſs, and courteſy, and not to tarry long in one place, until you ſhall have attained the moſt worthy place that may be found, in ſuch ſort, as you may return with victuals ſufficient, proſperouſly.

27. Item, the names of the people of every iſland, are to be taken in writing, with the commodities, and incommodities of the ſame, their natures, qualities, and diſpoſitions, the ſite of the ſame, and what things they are moſt deſirous of, and what commodities they will moſt willingly depart with, and what metals they have in hills, mountains, ſtreams, or rivers, in, or under the earth.

28. Item, if people ſhall appear gathering of ſtones, gold, metal, or other like, on the ſand, your pinnaces may draw nigh, marking what things they gather, uſing or playing upon the drum, or ſuch other inſtruments, as may allure them to hearkening, to fantaſy, or deſire to ſee, and hear your inſtruments and voices, but keep you out of danger, and ſhew to them no point or ſign of rigour and hoſtility.

29. Item, if you ſhall be invited into any lord's or ruler's houſe, to dinner, or other parliance, go in ſuch order of ſtrength, that you may be ſtronger than they, and be wary of woods and ambuſhes, and that your weapons be not out of your poſſeſſions.

30. Item,

30. Item, if you ſhall ſee them wear lions' or bears' ſkins, having long bows and arrows, be not afraid of that ſight: for ſuch be worn oftentimes more to fear ſtrangers, than for any other cauſe.

31. Item, there are people that can ſwim in the ſea, havens, and rivers, naked, having bows and ſhafts, coveting to draw nigh your ſhips, which if they ſhall find not well watched or warded, they will aſſault, deſirous of the bodies of men, which they covet for meat: if you reſiſt them, they dive, and ſo will flee, and therefore diligent watch is to be kept both day and night in ſome iſlands.

32. Item, if occaſion ſhall ſerve, that you may give advertiſements of your proceedings in ſuch things as may correſpond to the expectation of the company, and likelihood of ſucceſs in the voyage, paſſing ſuch dangers of the ſeas, perils of ice, intolerable colds, and other impediments, which by ſundry authors and writers, have miniſtered matter of ſuſpicion in ſome heads, that this voyage could not ſucceed for the extremity of the north pole, lack of paſſage, and ſuch like, which have cauſed wavering minds, and doubtful heads, not only to withdraw themſelves from the adventure of this voyage, but alſo diſſuaded others from the ſame, the certainty whereof, when you ſhall have tried by experience, (moſt certain maſter of all wordly knowledge,) then for declaration of the truth, which you ſhall have experted, you may by common aſſent of counſel, ſend either by land, or otherwiſe, ſuch two or one perſon, to bring the ſame by credit, as you ſhall think may paſs in ſafety: which ſending is not to be done, but upon urgent cauſes, in likely ſucceſs of the voyage, in finding of paſſage, in towardlineſs of beneficial traffic, or ſuch other like, whereby the company being advertiſed of your eſtates and proceedings, may further provide, forſee and determine that which may ſeem moſt good and beneficial for the public wealth of the ſame: either providing before-hand ſuch things, as ſhall be requiſite for the continuance of the voyage, or elſe otherwiſe to diſpoſe as occaſion ſhall ſerve: in which things your wiſdoms and diſcretions are to be uſed, and ſhewed, and the contents of this capitule, by you much to be pondered, for that you be not ignorant, how many perſons, as well as the king's majeſty, the lords of his honourable counſel, this whole company, as alſo your wives, children, kinsfolks, allies, friends, and familiars, be repleniſhed in their hearts with ardent deſire to learn and know your eſtates, conditions and welfares, and in what likelihood you be in, to obtain this notable enterprize, which is hoped no leſs to ſucceed to you, than the Orient or Occident Indies have to the high benefit of the emperor, and kings of Portugal, whoſe ſubjects, induſtries, and travels by ſea, have enriched them, by thoſe lands and iſlands, which were to all coſmographers, and other writers both unknown, and alſo by appearances of reaſon void of experience, thought and reputed unhabitable for extremities of heats and colds, and yet indeed tried, moſt rich, peopled, temperate, and ſo commodious, as all Europe hath not the like.

33. Item, no conſpiracies, part-takings, factions, falſe tales, untrue reports, which be the very ſeeds and fruits of contention, diſcord, and confuſion, by evil tongues to be ſuffered, but the ſame, and all other ungodlineſs be chaſtened charitably with brotherly love, and always obedience to be uſed and practiſed by all perſons in their degrees, not only for duty and conſcience ſake towards God, under whoſe merciful hand navigants above all other creatures naturally be moſt nigh and vicine, but alſo for prudent and worldly policy, and public weal, conſidering and always having preſent in your minds that you be all one moſt royal king's ſubjects and naturals, with daily remembrance of the great importance of the voyage, the honour, glory, praiſe, and benefit

benefit that depend of, and upon the fame, toward the common wealth of this noble realm, the advancement of you the travellers therein, your wives, and children, and ſo to endeavour yourſelves as that you may ſatisfy the expectation of them, who at their great coſts, charges, and expences, have ſo furniſhed you in good ſort, and plenty of all neceſſaries, as the like was never in any realm, ſeen, uſed, or known, requiſite and needful for ſuch an exploit, which is moſt likely to be atchieved, and brought to good effect, if every perſon in his vocation ſhall endeavour himſelf according to his charge, and moſt bounden duty: praying the living God, to give you his grace, to accompliſh your charge to his glory, whoſe merciful hand ſhall proſper your voyage, and preſerve you from all dangers.

In witneſs whereof I Sebaſtian Cabota, governor aforeſaid, to theſe preſent ordinances, have ſubſcribed my name, and put my ſeal, the day and year above written.

The names of the twelve counſellors appointed in this voyage.

1. Sir Hugh Willoughby, knight, captain-general.
2. Richard Chancelor, captain of the Edward Bonaventure, and pilot-general of the fleet.
3. George Burton, cape merchant.
4. Maſter Richard Stafford, miniſter.
5. Thomas Langlie, merchant.
6. James Delahere, gentleman.
7. William Gefferſon, maſter of the Bona Speranza admiral.
8. Stephen Burrough, maſter of the Edward Bonaventure.
9. Cornelius Durforth, maſter of the Confidentia.
10. Roger Wilſon,
11. John Buckland,
12. Richard Ingram,

} maſters' mates.

The copy of the letters miſſive which the right noble Prince Edward the Sixth, ſent to the kings, princes, and other potentates, inhabiting the north-eaſt parts of the world, toward the mighty empire of Cathay; at ſuch time as ſir Hugh Willoughby, knight, and Richard Chancelor, with their company attempted their voyage thither in the year of Chriſt 1553, *and the ſeventh and laſt year of his reign.*

EDWARD the Sixth, by the grace of God, king of England, France, and Ireland, &c. To all kings, princes, rulers, judges, and governors of the earth, and all other having any excellent dignity on the ſame, in all places under the univerſal heaven: peace, tranquillity, and honour be unto you, and your lands and regions, which are under your dominions, and to every of you, as is convenient.

For as much as the great and Almighty God hath given unto mankind, above all other living creatures, ſuch a heart and deſire, that every man deſireth to join friendſhip with other, to love and be loved, alſo to give and receive mutual benefits: it is therefore the duty of all men, according to their power, to maintain and increaſe this deſire in every man, with well deſerving to all men, and eſpecially to ſhew this good affection to ſuch, as being moved with this deſire, come unto them from far countries. For how much the longer voyage they have attempted for this intent, ſo much the more do they thereby declare that this deſire hath been ardent in them. Furthermore alſo, the examples of our fathers and predeceſſors do invite us hereunto,

forasmuch as they have ever gently and lovingly intreated such as of friendly mind came to them, as well from countries near hand, as far remote, commending themselves to their protection. And if it be right and equity to shew such humanity toward all men, doubtless the same ought chiefly to be shewn to merchants, who wandering about the world, search both the land and the sea, to carry such good and profitable things, as are found in their countries, to remote regions and kingdoms, and again to bring from the same, such things as they find there commodious for their own countries: both as well that the people, to whom they go, may not be destitute of such commodities as their countries bring not forth to them, as that also they may be partakers of such things whereof they abound. For the God of heaven and earth greatly providing for mankind, would not that all things should be found in one region, to the end that one should have need of another, that by this means friendship might be established among all men, and every one seek to gratify all. For the establishing and furtherance of which universal amity, certain men of our realm, moved hereunto by the said desire, have instituted and taken upon them a voyage by sea into far countries, to the intent that between our people and them, a way may be opened to bring in, and carry out merchandises, desiring us to further their enterprize. Who assenting to their petition, have licensed the right valiant, and worthy sir Hugh Willoughby, knight, and other our trusty and faithful servants, which are with him, according to their desire, to go to countries to them heretofore unknown, as well to seek such things as we lack, as also to carry unto them from our regions, such things as they lack. So that hereby not only commodity may ensue both to them and us, but also an undissoluble and perpetual league of friendship be established between us both, while they permit us to take of their things, such whereof they have abundance in their regions, and we again grant them such things of ours, whereof they are destitute. We therefore desire you kings and princes, and all other to whom there is any power on the earth, to permit unto these our servants free passage by your regions and dominions: for they shall not touch any thing of yours unwilling unto you. Consider you that they also are men. If therefore they shall stand in need of any thing, we desire you of all humanity, and for the nobility which is in you, to aid and help them with such things as they lack, receiving again of them such things as they shall be able to give you in recompence. Shew yourselves so towards them, as you would that we and our subjects should shew ourselves towards your servants, if at any time they shall pass by our regions.

Thus doing, we promise you by the God of all things that are contained in heaven, earth, and the sea, and by the life and tranquillity of our kingdoms, that we will with like humanity accept your servants, if at any time they shall come to our kingdoms, where they shall as friendly and gently be entertained, as if they were born in our dominions, that we may hereby recompence the favour and benignity which you have shewed to our men. Thus after we have desired you kings and princes, &c. with all humanity and favour, to entertain our well-beloved servants, we will pray our Almighty God, to grant you long life and peace, which never shall have end. Written in London, which is the chief city of our kingdom, in the year from the creation of the world, 5515 in the month of Jiar*, the fourteenth day of the month, and seventh year of our reign.

* Hakluyt supposes this to be the Saracen name of February. In the geography of these times the savages of the north of Europe were supposed to be Saracens. This letter is translated by Hakluyt from the Latin, and he adds that it was likewise written in Greek and other languages.

The

The true copy of a note found written in one of the two ſhips, to wit, the Speranza, which wintered in Lappia, where Sir Hugh Willoughby and all his company died, being frozen to death, anno 1553.

THE voyage intended for the diſcovery of Cathay, and divers other regions, dominions, iſlands, and places unknown, ſet forth by the right worſhipful maſter Sebaſtian Cabota eſquire, and governor of the myſtery and company of the merchants adventurers of the city of London: which fleet being furniſhed, did ſet forth the tenth day of May, 1553, and in the ſeventh year of our moſt dread ſovereign lord and king, Edward the ſixth.

The names of the ſhips of the fleet, and of their burden, together with the names of the captains, and counſellors, pilot-major, maſters of the ſhips, merchants, with other officers, and mariners, as hereafter followeth.

The Bona Eſperanza, admiral of the fleet, of 120 *tons, having with her a pinnace and a boat.*

Sir Hugh Willoughby, knight, captain-general of the fleet.
William Gefferſon, maſter of the ſhip.
Roger Wilſon, his mate.
William Gittons, Charles Barrett, Gabriel Willoughby, John Andrews, Alexander Woodfoord, Ralph Chatterton, merchants.

Mariners and officers, according to the uſe and cuſtom of the ſeas.

John Brooke, maſter gunner.
Nicholas Anthony, boatſwain.
John Web, his mate.
Chriſtopher Banbrucke, Thomas Daviſon, Robert Roſſe, Thomas Simpſon, quarter maſters.
William White, James Smith, Thomas Painter, John Smith, their mates.
Richard Gwinne, George Goiſwine, carpenters.
Robert Gwinne, purſer.
Laurence Edwards, his mate and cooper.
Richard Morgan, cook.
Thomas Naſhe, his mate.
William Light, John Brande, Cutbert Chelſie, George Blage, Thomas Walker, Thomas Allen, Edward Smith, Edward Hunt, John Fawkner, Rowland Brooke.
Alexander Gardiner, Richard Molton, Surgeons, which two were taken in at Harwich.
Diſcharged at Harwich, by reaſon of ſickneſs, George Blake, Nicholas Anthony.
For Pickerie ducked at the yard's arm, and ſo diſcharged, Thomas Naſh.

The Edward Bonadventure, of 160 *tons, with her a pinnace, and a boat.*

Richard Chancelor, captain, and pilot-major of the fleet.
Stephen Borowgh, maſter of the ſhip.
John Buckland, his mate.
George Burton, Arthur Edwards, merchants.
John Stafford, miniſter.
James Dallaber, Nicholas Newborrow, John Segſwike, Thomas Francis, John Haſſe, Richard Johnſon, William Kempe.

Mariners and officers, according to the uſe and cuſtom of the ſeas.

Robert Stanton, maſter gunner.
John Walker, his mate.
James Long, John Cocks, gunners.
Thomas Walter, ſurgeon.
Peter Palmer, boatſwain.
Richard Strowde, his mate.
John Robinſon, John Carowe, Thomas Stone, Roger Liſhbie, quarter maſters.
John Auſten, ſteward, Patrick Stevens, his mate.
Auſten Jacks, cook.
William Every, cooper.
Griffin Wagham, carpenter.
Thomas Stelſton, Thomas Townes, John Robinſon, John White, William Laurence, Miles Butter, John Browne, William Morren, William Watſon, Thomas Handcocks, Edward Pacie, Thomas Browne, Arthur Pet, George Phibarie, Edward Paterſon, William Beare, John Potter, Nicholas Lawrence, William Burrough, Roger Welford, John Williams.

The Bona Confidentia of 90 tons, having with her a pinnace and a boat.

Cornelius Durfoorth, maſter of the ſhip.
Richard Ingram, his mate.
Thomas Langlie, Edward Kever, Henry Dorſet, merchants.

Mariners and officers, according to the uſe and cuſtom of the ſea.

Henry Tailer, maſter gunner.
George Thurland, his mate.
William Hamane, boatſwain.
John Edwards, his mate.
Thomas Kirbie, Henry Dickenſon, John Haye, William Shepwaſh, quarter maſters.
John Reyne, ſteward.
Thomas Haute, cook, William Laſſie, his mate.
Nicholas Knight, carpenter.
Peter Lewike, Nicholas Wiggleworth, John Moore, William Chapman, Brian Cheſter, William Barrie, Richard Wood, Clement Gibſon, John Clarecke, Eraſmus Bentley, John Duriforth.

The juramentum, or oath, miniſtered to the captain.

You ſhall ſwear to be a faithful, true and loyal ſubject in all points and duties, that to a ſubject appertaineth, to our ſovereign lord the king's majeſty, his heirs, and ſucceſſors: and that you ſhall well and truly to the uttermoſt of your capacity, wit, and knowledge, ſerve this preſent voyage, committed to your charge, and not to give up, nor ſooner intermit the ſame, until you ſhall have atchieved the ſame, ſo far forth, as you may without danger of your life, and loſs of the fleet: you ſhall give good, true, and faithful counſel to the ſaid ſociety, and to ſuch as ſhall have the charge with or under you, and not to diſcloſe the ſecrets, or privities of the ſame to any perſon by any manner of mean, to the prejudice, hurt, or damage of it. You ſhall miniſter juſtice to all men under your charge, without reſpect of perſon, or any affection, that might move you to decline from the true miniſtration of juſtice. And further, you ſhall obſerve, and cauſe to be obſerved, as much as in you lieth, all and ſingular rules, articles, proviſions hitherto made, or hereafter to be made for the preſervation

ſervation or ſafe conduct of the fleet and voyage, and benefit of the company. You ſhall not permit nor ſuffer the ſtock or goods of the company to be waſted, embezzled, or conſumed, but ſhall conſerve the ſame whole and entire, without diminiſhment, until you ſhall have delivered or cauſe to be delivered the ſame, to the uſe of the company. And finally you ſhall uſe yourſelf in all points, ſorts, and conditions, as to a faithful captain, and brother of this company ſhall belong and appertain: ſo help you God, &c.

The oath miniſtered to the maſter of the ſhip, &c.

You ſhall ſwear by the holy contents in that book, that you, according and to the uttermoſt of your knowledge, and good underſtanding in mariner's ſcience and craft, ſhall in your vocation do your beſt to conduct the good ſhip called the N. &c. whereof you now are maſter under God, both unto and from the ports of your diſcovery, and ſo uſe your endeavour and faithful diligence, in charging, diſcharging, lading again, and roomaging of the ſame ſhip, as may be moſt for the benefit and profit of this right worſhipful fellowſhip: and you ſhall not privately bargain, buy, ſell, exchange, barter, or diſtribute any goods, wares, merchandiſe, or things whatſoever (neceſſary tackles and victuals for the ſhip only excepted,) to or for your own lucre, gain, or profit, neither to nor for the private lucre, gain, or profit of any other perſon or perſons whatſoever. And further, if you ſhall know any boatſwain, mariner, or any other perſon or perſons whatſoever, to buy, ſell, barter, truck, or exchange any goods, wares, merchandiſes, or things for private account, reckoning, or behalf, you ſhall do your beſt to withſtand and let the ſame: and if you cannot commodiouſly ſo do, that then before the diſcharge of ſuch goods, bought for private account, you ſhall give knowledge thereof to the cape merchant of this ſaid fellowſhip for the time being. And you ſhall not receive nor take, nor ſuffer to be received or taken into your ſaid ſhip during this voyage, any maner perſon or perſons whatſoever, going or returning, but only thoſe mariners which without fraud or guile ſhall be hired to be of your company, and to ſerve in mariners' craft and ſcience only: So help you God, &c.

These foreſaid ſhips being fully furniſhed with their pinnaces and boats, well appointed with all manner of artillery, and other things neceſſary for their defence with all the men aforeſaid, departed from Ratcliffe, and valed unto Deptford, the tenth day of May, 1553.

The eleventh day about two of the clock, we departed from Deptford, paſſing by Greenwich, ſaluting the king's majeſty then being there, ſhooting off our ordnance, and ſo valed unto Blackwall, and there remained until the ſeventeenth day, and that day in the morning we went from Blackwall, and came to Woolwich by nine of the clock, and there remained one tide, and ſo the ſame night unto Heyreth.

The eighteenth day from Heyreth unto Graveſend, and there remained until the twentieth day: that day being Saturday, from Graveſend unto Tilbury Hope, remaining there until the two and twentieth day.

The twenty-ſecond day from Tilbury Hope to Hollie Haven.

The twenty-third day from Hollie Haven, till we came againſt Lee, and there remained that night, by reaſon that the wind was contrary to us.

The twenty-fourth day the wind being in the S. W. in the morning, we ſailed along the coaſt over the Spits, until we came againſt St. Oſyth, about ſix of the clock at night, and there came to anchor, and abode there all that night.

The twenty-fifth day about ten of the clock we departed from St. Oſyth, and ſo ſailed forward unto the Nase, and there abode that night for wind and tide.

The twenty-ſixth day at five of the clock in the morning, we weighed our anchor, and ſailed over the Nase, the wind being at the S. W. until we came to Orwell Wands, and there came to an anchor, and abode there until the twenty-eighth day.

The ſame day being Trinity Sunday, about ſeven of the clock before noon we weighed our anchors, and ſailed till we came athwart Walſurſye, and there came to an anchor.

The twenty-ninth day from thence to Holmehead, where we ſtayed that day, where we conſulted which way, and what courſes were beſt to be holden for the diſcovery of our voyage, and there agreed.

The thirtieth day of May, at five of the clock in the morning, we ſet ſail, and came againſt Permouth, about three leagues into the ſea, riding there at anchor all that night.

The laſt of May into the ſea ſix leagues N. E. and there tarried that night, where the wind blew very ſore.

The firſt of June, the wind being at north, contrary to us, we came back again to Orwell, and remained there until the fifteenth day, tarrying for the wind, for all this time the wind was contrary to our purpoſe.

The fifteenth day being at Orwell, in the latitude of 52 degrees, in the morning we weighed our anchors, and went forth into the Wands, about two miles from the town, and lay there that night.

The ſixteenth day, at eight of the clock, we ſet forward and ſailed until we came athwart Alburrough, and there ſtayed that night.

The ſeventeenth day, about five of the clock before noon, we went back unto Orfordneſſe, and there remained until the nineteenth day.

The nineteenth day, at eight of the clock in the morning, we went back to Orwell, and abode there three days tarrying for the wind.

The twenty-third day of June, the wind being fair in the S. W. we hailed into the ſeas to Orfordneſſe, and from thence into the ſeas ten leagues N. E.: then being paſt the ſands, we changed our courſe ſix leagues N. N. E.: about midnight we changed our courſe again, and went due N. continuing in the ſame unto the twenty-ſeventh day.

The twenty-ſeventh day, about ſeven of the clock, N. N. W. 42 leagues, to the end to fall with Shotland: then the wind veered to the W. ſo that we could lie but N. and by W. continuing in the ſame courſe 40 leagues, whereby we could not fetch Shotland: then we ſailed N. 16 leagues by eſtimation, after that N. and by W. and N. N. W. then S. E. with divers other courſes, traverſing and tracing the ſeas, by reaſon of ſundry and manifold contrary winds, until the fourteenth day of July: and then the ſun entering into Leo, we diſcovered land eaſtward of us, unto the which we ſailed that night as much as we might: and after we went on ſhore with our pinnace, and found little houſes to the number of thirty, where we knew that it was inhabited, but the people were fled away, as we judged, for fear of us.

The land was all full of little iſlands, and that innumerable, which were called (as we learned afterwards) Ægeland, and Halgeland, which lieth from Orfordneſſe N. and by E. being in the latitude of 66 degrees*. The diſtance between Orfordneſſe and Ægeland 250 leagues. Then we ſailed from thence 12 leagues N. W. and found many other iſlands, and there came to anchor the 19th day, and manned our pinnace, and

* In fact between 54 and 55 degrees.

went on ſhore to the iſlands, and found people mowing and making of hay, which came to the ſhore and welcomed us. In which place were an innumerable ſort of iſlands, which were called the Iſles of Roſt, being under the dominion of the king of Denmark: which place was in latitude 66 degrees, and 30 minutes. The wind being contrary, we remained there three days, and there was an innumerable ſort of fowls of divers kinds, of which we took very many.

The 22d day, the wind coming fair, we departed from Roſt, ſailing N. N. E. keeping the ſea until the 27th day, and then we drew near unto the land, which was ſtill E. of us; then went forth our pinnace to ſeek harbour, and found many good harbours, of the which we entered into one with our ſhips, which was called Stanfew, and the land being iſlands, were called Lewfoot, or Lofoot*, which were plentifully inhabited, and very gentle people, being alſo under the king of Denmark; but we could not learn how far it was from the main land: and we remained there until the 30th day, being in latitude 68 degrees, and from the aforeſaid Roſt about 30 leagues N. N. E.

The 30th day of July about noon we weighed our anchors, and went into the ſeas, and ſailed along theſe iſlands N.N.E. keeping the land ſtill in ſight until the ſecond day of Auguſt: then hailing in cloſe aboard the land, to the intent to know what land it was, there came a ſkiff of the iſland aboard of us, of whom we aſked many queſtions, who ſhewed unto us that the iſland was called Seynam,† which is the latitude of ſeventy degrees, and from Stanfew thirty leagues, being alſo under the king of Denmark; and that there was no merchandiſe there, but only dried fiſh and train oil. Then we being purpoſed to go unto Finmark, enquired of him if we might have a pilot to bring us unto Finmark: and he ſaid, that if we could bear in, we ſhould have a good harbour, and on the next day a pilot to bring us to Finmark, unto the Wardhouſe, which is the ſtrongeſt hold in Finmark, and moſt reſorted to by report. But when we would have entered into an harbour, the land being very high on every ſide, there came ſuch flawes of wind and terrible whirlwinds, that we were not able to bear in, but by violence were conſtrained to take the ſea again, our pinnace being unſhipped: we ſailed N. and by E. the wind increaſing ſo ſore that we were not able to bear any ſail, but took them in, and lay adrift to the end to let the ſtorm overpaſs. And that night by violence of wind, and thickneſs of miſts, we were not able to keep together within ſight, and then about midnight we loſt our pinnace, which was a diſcomfort unto us. As ſoon as it was day, and the fog overpaſt, we looked about, and at the laſt we deſcried one of our ſhips to leeward of us; then we ſpread an hullock of our foreſail, and bare room with her, which was the Confidence, but the Edward we could not ſee. Then the flaw ſomething abating, we and the Confidence hoiſted up our ſails the fourth day, ſailing N. E. and by N. to the end to fall with the Wardhouſe, as we did conſult to do before, in caſe we ſhould part company. Thus running N. E. and by N. and N. E. fifty leagues, then we ſounded and had 160 fathoms, whereby we thought to be far from land, and perceived that the land lay not as the globe made mention. Wherefore we changed our courſe the ſixth day, and ſailed S. E. and by S. eight-and-forty leagues, thinking thereby to find the Wardhouſe.

The eighth day much wind riſing at the W. N. W. we not knowing how the coaſt lay, ſtruck our ſails, and lay adrift, where we ſounded, and found 160 fathoms as afore.

The ninth day, the wind veering to the S. S. E. we ſailed N. E. 25 leagues.

* Loffoden. † Senjan.

The

The tenth day we founded, and could get no ground, neither yet could ſee any land, whereat we wondered; then the wind coming at the N. E. we ran S. E. about 48 leagues.

The eleventh day, the wind being at S., we founded and found 40 fathoms and fair ſand.

The twelfth day, the wind being at S. and by E. we lay with our ſail E. and E. and by N. 30 leagues.

The fourteenth day, early in the morning, we deſcried land, which land we bare with all, hoiſting out our boat to diſcover what land it might be; but the boat could not come to land the water was ſo ſhoal, where was very much ice alſo, but there was no ſimilitude of habitation, and this land lieth from Seynam E. and by N. 160 leagues, being in latitude 72 degrees. Then we plied to the northward the fifteenth, ſixteenth, and ſeventeenth day.

The eighteenth day, the wind coming at the N.E., and the Confidence being troubled with bilge water, and ſtocked, we thought it good to ſeek harbour for her redreſs: then we bare room the 18th day S. S. E. about 70 leagues.

The twenty-firſt day we ſounded and found 10 fathom, after that we ſounded again and found but 7 fathom, ſo ſhallower and ſhallower water, and yet could ſee no land, where we marvelled greatly: to avoid this danger, we bare roomer into the ſea all that night N. W. and by W.

The next day we ſounded and had twenty fathoms, then ſhaped our courſe, and ran W. S. W. until the twenty-third day: then we deſcried low land, unto which we bare as nigh as we could, and it appeared unto us unhabitable. Then we plied weſtward along by that land, which lieth W. S. W. and E. N. E. and much wind blowing at the W. we haled into the ſea N. and by E. 30 leagues. Then the wind coming about at the N. E. we ſailed W. N. W.: after that the wind bearing to the N. W. we lay with our ſails W. S. W. about 14 leagues, and then deſcried land, and bare in with it, being the 28th day, finding ſhoal water, and bare in till we came to three fathom, then perceiving it to be ſhoal water, and alſo ſeeing dry ſands, we haled out again N. E. along that land until we came to the point thereof. That land turning to the weſtward, we ran along 16 leagues N. W.: then coming into a fair bay, we went on land with our boat, which place was unhabited, but yet it appeared unto us that the people had been there, by croſſes and other ſigns: from thence we went all along the coaſt weſtward.

The fourth day of September we loſt ſight of land, by reaſon of contrary winds, and the eighth day we deſcried land again. Within two days after we loſt the ſight of it: then running W. and by S. about thirty leagues, we got the ſight of land again, and bare in with it until night: then perceiving it to be a lee ſhore, we got us into the ſea, to the end to have ſea room.

The twelfth of September we haiſed to ſhoreward again, having then indifferent wind and weather: then being near unto the ſhore, and the tide almoſt ſpent, we came to an anchor in 30 fathoms water.

The thirteenth day we came along the coaſt which lay N. W. and by W. and S. E. and by E.

The fourteenth day we came to an anchor within two leagues of the ſhore, having 60 fathoms.

There we went aſhore with our boat, and found two or three good harbours, the land being rocky and high, but as for people could we ſee none. The fifteenth day we ran ſtill along the coaſt until the ſeventeenth day: then the wind being contrary unto us,

we thought it beſt to return unto the harbour which we had found before, and ſo we bare roomer with the ſame, howbeit we could not accompliſh our deſire that day. The next day, being the eighteenth of September, we entered into the haven, and there came to an anchor at ſix fathoms. This haven runneth into the main, about two leagues, and is in breadth half a league, wherein were very many ſeal fiſhes, and other great fiſhes, and upon the main we ſaw bears, great deer, foxes, with divers ſtrange beaſts, as guloines*, and ſuch other which were to us unknown, and alſo wonderful. Thus remaining in this haven the ſpace of a week, ſeeing the year far ſpent, and alſo very evil weather, as froſt, ſnow, and hail, as though it had been the deep of winter, we thought beſt to winter there. Wherefore we ſent out three men S. S. W. to ſearch if they could find people, who went three days journey, but could find none: after that we ſent other three weſtward, four days journey, which alſo returned without finding any people. Then ſent we three men S. E. three days journey, who in like ſort returned without finding of people, or any ſimilitude of habitation.

Theſe two notes following were written upon the outſide of this pamphlet or book.

" 1. The proceedings of Sir Hugh Willoughbie after he was ſeparated from the Edward Bonaventure.

2. Our ſhip being at an anchor in the harbour called Sterfier, in the iſland Lofoote."

The river or haven wherein Sir Hugh Willoughbie with the company of his two ſhips periſhed for cold, is called Arzina in Lapland, near unto Kegor. But it appeareth by a will found in the ſhip, that Sir Hugh Willoughbie and moſt of the company were alive in January 1554.

* Hakluyt adds upon the margin, *or ellons:* and adds, that in this harbour they died.

The Book of the great and mighty Emperor of Ruſſia, and Duke of Moſcovia, and of the dominions, orders and commodities thereunto belonging: drawn by Richard Chancelour.

FOR as much as it is meet and neceſſary for all thoſe that mind to take in hand the travel into far or ſtrange countries, to endeavour themſelves not only to underſtand the orders, commodities, and fruitfulneſs thereof, but alſo to apply them to the ſetting forth of the ſame, whereby it may encourage others to the like travail: therefore have I now thought good to make a brief rehearſal of the orders of this my travail in Ruſſia and Moſcovia, and other countries thereunto adjoining; becauſe it was my chance to fall with the north parts of Ruſſia before I came towards Moſcovia, I will partly declare my knowledge therein. Ruſſia is very plentiful both of land and people, and alſo wealthy for ſuch commodities as they have. They be very great fiſhers for ſalmons and ſmall cods: they have much oil, which we call train-oil, the moſt whereof is made by a river called Duina. They make it in other places, but not ſo much as there. They have alſo a great trade in ſeething of ſalt water. To the north part of that country are the places where they have their furs; as ſables, marterns, greeſſe beavers, foxes white, black, and red, minks, ermines, miniver, and harts. There are alſo a fiſh's teeth, which fiſh is called a morſſe. The takers thereof dwell in a place called Poſteſora, which bring them upon harts to Lampas to ſell, and from Lampas carry them to a place called Colmogro, where the high market is holden on St. Nicholas day. To the weſt of Colmogro there is a place called Gratanove, in our language Novogorode, where much fine flax and hemp groweth, and alſo much wax and honey. The Dutch merchants have a ſtaple houſe there. There is alſo great ſtore of hides, and at a place called Pleſco: and thereabouts is great ſtore of flax, hemp, wax, honey; and that town is from Colmogro 120 miles.

There is a place called Vologda, the commodities whereof are tallow, wax, and flax; but not ſo great plenty as is in Gratanove. From Vologda to Colmogro there runneth a river called Duyna, and from thence it falleth into the ſea. Colmogro ſerveth Gratanove, Vologda, and the Moſco, with all the country thereabout, with ſalt and ſalt fiſh. From Vologda to Jeraſlave is two hundred miles; which town is very great: the commodities thereof are hides, and tallow, and corn in great plenty, and ſome wax, but not ſo plentiful as in other places.

The Moſco is from Jeraſlave two hundred miles. The country betwixt them is very well repleniſhed with ſmall villages, which are ſo well filled with people, that it is wonder to ſee them: the ground is well ſtored with corn, which they carry to the city of Moſco in ſuch abundance, that it is wonder to ſee it. You ſhall meet in a morning ſeven or eight hundred ſledges coming or going thither, that carry corn and ſome carry fiſh. You ſhall have ſome that carry corn to the Moſco, and ſome that fetch corn from thence, that at the leaſt dwell a thouſand miles off; and all their carriage is on ſledges. Thoſe which come ſo far dwell in the north parts of the duke's dominions, where the cold will ſuffer no corn to grow, it is ſo extreme. They bring thither fiſhes, furs, and beaſts' ſkins. In thoſe parts they have but ſmall ſtore of cattle.

The Moſco itſelf is great: I take the whole town to be greater than London with the ſuburbs; but it is very rude, and ſtandeth without all order. Their houſes are all of timber, very dangerous for fire. There is a fair caſtle, the walls whereof are of brick, and

and very high: they ſay they are eighteen feet thick, but I do not believe it, it doth not ſo ſeem, notwithſtanding I do not certainly know it; for no ſtranger may come to view it. The one ſide is ditched, and on the other ſide runneth a river called Moſcua, which runneth into Tartary, and ſo into the ſea called Mare Caſpium: and on the north ſide there is a baſe town, the which hath alſo a brick wall about it, and ſo it joineth with the caſtle wall. The emperor lieth in the caſtle, wherein are nine fair churches, and therein are religious men. Alſo there is a metropolitan with divers biſhops. I will not ſtand in deſcription of their buildings, nor of the ſtrength thereof, becauſe we have better in all points in England. They be well furniſhed with ordinance of all ſorts.

The emperor's or duke's houſe neither in building, nor in the outward ſhew, nor yet within the houſe, is ſo ſumptuous as I have ſeen. It is very low built in eight ſquare, much like the old building of England, with ſmall windows, and ſo in other points.

Now to declare my coming before his majeſty: after I had remained twelve days, the ſecretary which hath the hearing of ſtrangers did ſend for me, advertiſing me that the duke's pleaſure was to have me to come before his majeſty, with the king's my maſter's letters; whereof I was right glad, and ſo I gave mine attendance. And when the duke was in his place appointed, the interpreter came for me into the outer chamber, where ſat one hundred or more gentlemen, all in cloth of gold, very ſumptuous, and from thence I came into the council-chamber, where ſat the duke himſelf with his nobles, which were a fair company: they ſat round about the chamber on high, yet ſo that he himſelf ſat much higher than any of his nobles, in a chair gilt, and in a long garment of beaten gold, with an imperial crown upon his head, and a ſtaff of cryſtal and gold in his right hand, and his other hand half leaning on his chair. The chancellor ſtood up with the ſecretary before the duke. After my duty done and my letter delivered, he bade me welcome, and enquired of me the health of the king my maſter; and I anſwered that he was in good health at my departure from his court, and that my truſt was that he was now in the ſame. Upon the which he bade me to dinner. The chancellor preſented my preſent unto his grace bareheaded (for before they were all covered), and when his grace had received my letter, I was required to depart: for I had charge not to ſpeak to the duke, but when he ſpake to me. So I departed unto the ſecretary's chamber, where I remained two hours, and then I was ſent for again unto another palace which is called the golden palace, but I ſaw no cauſe why it ſhould be ſo called; for I have ſeen many fairer than it in all points: and ſo I came into the hall, which was ſmall and not great, as is the king's majeſty's of England, and the table was covered with a table-cloth; and the marſhall ſat at the end of the table with a little white rod in his hand, which board was full of veſſels of gold: and on the other ſide of the hall did ſtand a fair cupboard of plate. From thence I came into the dining chamber, where the duke himſelf ſat at his table without cloth of eſtate, in a gown of ſilver, with a crown imperial on his head; he ſat in a chair ſomewhat high: there ſat none near him by a great way. There were long tables ſet round about the chamber, which were full ſet with ſuch as the duke had at dinner: they were all in white. Alſo the places where the tables ſtood were higher by two ſteps than the reſt of the houſe. In the midſt of the chamber ſtood a table or cupboard to ſet plate on; which ſtood full of cups of gold: and amongſt all the reſt there ſtood four marvellous great pots or crudences, as they call them, of gold and ſilver: I think they were a good yard and a half high. By the cupboard ſtood two gentlemen with napkins on their ſhoulders, and in their hands each of them had a cup of gold ſet with pearls and precious ſtones, which were the duke's own drinking-cups: when he was diſpoſed, he drank them off at a draught. And for

his ſervice at meat it came in without order, yet it was very rich ſervice: for all were ſerved in gold, not only he himſelf, but alſo all the reſt of us, and it was very maſſy: the cups alſo were of gold, and very maſſy. The number that dined there that day was two hundred perſons, and all were ſerved in golden veſſels. The gentlemen that waited were all in cloth of gold, and they ſerved him with their caps on their heads. Before the ſervice came in the duke ſent to every man a great ſhiver of bread, and the bearer called the party ſo ſent to by his name aloud, and ſaid, John Baſiliuich, emperor of Ruſſia and great duke of Moſcovia, doth reward thee with bread: then muſt all men ſtand up, and do at all times when theſe words are ſpoken. And then laſt of all he giveth the marſhall bread, whereof he eateth before the duke's grace, and ſo doth reverence and departeth. Then cometh the duke's ſervice of the ſwans, all in pieces, and every one in a ſeveral diſh: the which the duke ſendeth as he did the bread, and the bearer ſaith the ſame words as he ſaid before. And as I ſaid before, the ſervice of his meat is in no order, but cometh in diſh by diſh: and then after that the duke ſendeth drink, with the like ſaying as before is told. Alſo before dinner he changed his crown, and in dinner time two crowns; ſo that I ſaw three ſeveral crowns upon his head in one day. And thus when his ſervice was all come in, he gave to every one of his gentlemen waiters meat with his own hand, and ſo likewiſe drink. His intent thereby is, as I have heard, that every man ſhall know perfectly his ſervants. Thus when dinner is done, he calleth his nobles before him name by name, that it is wonder to hear how he could name them, having ſo many as he hath. Thus when dinner was done, I departed to my lodging, which was an hour within night. I will leave this, and ſpeak no more of him nor his houſehold: but I will ſomewhat declare of his land and people, with their nature and power in the wars. This duke is lord and emperor of many countries, and his power is marvellous great; for he is able to bring into the field two or three hundred thouſand men: he never goeth into the field himſelf with under two hundred thouſand men: and when he goeth himſelf he furniſheth his borders all with men of war, which are no ſmall number. He leaveth on the borders of Liefland forty thouſand men, and upon the borders of Letto ſixty thouſand men, and toward the Nagayan Tartars ſixty thouſand, which is wonder to hear of: yet doth he never take to his wars neither huſbandmen nor merchant. All his men are horſemen: he uſeth no footmen, but ſuch as go with the ordinance and labourers, which are thirty thouſand. The horſemen are all archers, with ſuch bows as the Turks have, and they ride ſhort as do the Turks. Their armour is a coat of plate, with a ſkull on their heads. Some of their coats are covered with velvet or cloth of gold; their deſire is to be ſumptuous in the field, and eſpecially the nobles and gentlemen: as I have heard their trimming is very coſtly, and partly I have ſeen it, or elſe I would ſcarcely have believed it: but the duke himſelf is richly attired above all meaſure; his pavilion is covered either with cloth of gold or ſilver, and ſo ſet with ſtones, that it is wonderful to ſee it. I have ſeen the king's majeſty's of England, and the French king's pavilions, which are fair, yet not like unto his. And when they be ſent into far or ſtrange countries, or that ſtrangers come to them, they be very gorgeous: elſe the duke himſelf goeth but meanly in apparel; and when he goeth betwixt one place and another, he is but reaſonably apparelled over other times. In the while that I was in Moſco the duke ſent two ambaſſadors to the king of Poland, which had at the leaſt five hundred horſes; their ſumptuouſneſs was above meaſure, not only in themſelves, but alſo in their horſes, as velvet, cloth of gold, and cloth of ſilver, ſet with pearls and not ſcant. What ſhall I farther ſay? I never heard of nor ſaw men ſo ſumptuous; but it is no daily guiſe, for when they have

not

not occaſion, as I ſaid before, all their doing is but mean. And now to the effect of their wars: they are men without all order in the field; for they run hurling on heaps, and for the moſt part they never give battle to their enemies; but that which they do, they do it all by ſtealth. But I believe they be ſuch men for hard living as are not under the ſun, for no cold will hurt them: yea, and though they lie in the field two months, at ſuch time as it ſhall freeze more than a yard thick, the common ſoldier hath neither tent nor any thing elſe over his head; the moſt defence they have againſt the weather is a felt, which is ſet againſt the wind and weather, and when ſnow cometh he doth caſt it off, and maketh him a fire, and layeth him down thereby. Thus do the moſt of all his men, except they be gentlemen, which have other proviſion of their own. Their lying in the field is not ſo ſtrange as is their hardneſs; for every man muſt carry and make proviſion for himſelf and his horſe for a month or two, which is very wonderful. For he himſelf ſhall live upon water and oatmeal mingled together cold, and drink water thereto: his horſe ſhall eat green wood, and ſuch like baggage, and ſhall ſtand open in the cold field without covert, and yet will he labour and ſerve him right well. I pray you among all our boaſting warriors how many ſhould we find to endure the field with them but one month. I know no ſuch region about us that beareth that name for man and beaſt. Now what might be made of theſe men if they were trained and broken to order and knowledge of civil wars? If this prince had within his countries ſuch men as could make them to underſtand the things aforeſaid, I do believe that two of the beſt or greateſt princes in Chriſtendom were not well able to match with him, conſidering the greatneſs of his power and the hardineſs of his people, and ſtrait living both of people and horſe, and the ſmall charges which his wars ſtand him in; for he giveth no wages except to ſtrangers. They have a yearly ſtipend, and not much. As for his own countrymen, every one ſerveth of his own proper coſts and charges, ſaving that he giveth to his arcubuſſiers certain allowance for powder and ſhot, or elſe no man in all his country hath one penny wages. But if any man hath done very good ſervice, he giveth him a farm or a piece of land; for the which he is bound at all times to be ready with ſo many men as the duke ſhall appoint; who conſidereth in his mind what that land or farm is well able to find: and ſo many ſhall he be bound to furniſh at all and every ſuch time as wars are holden in any of the duke's dominions. For there is no man of living but he is bound likewiſe, whether the duke call for either ſoldier or labourer, to furniſh them with all ſuch neceſſaries as to them belong.

Alſo, if any gentleman or man of living do die without iſſue male, immediately after his death the duke entereth his land, notwithſtanding he have never ſo many daughters, and peradventure giveth it forthwith to another man, except a ſmall portion that he ſpareth to marry the daughters withal. Alſo if there be a rich man, a fermour, or man of living, which is ſtricken in age, or by chance is maimed, and be not able to do the duke's ſervice, ſome other gentleman that is not able to live, and more able to do ſervice, will come to the duke and complain, ſaying, your grace hath ſuch an one, which is unmeet to do ſervice to your highneſs, who hath great abundance of wealth, and likewiſe your grace hath many gentlemen which are poor and lack living, and we that lack are well able to do good ſervice, your grace might do well to look upon him, and make him to help thoſe that want. Immediately the duke ſendeth forth to inquire of his wealth; and if it be ſo proved, he ſhall be called before the duke, and it ſhall be ſaid unto him, friend, you have too much living, and are unſerviceable to your prince; leſs will ſerve you, and the reſt will ſerve other men that are more able to ſerve; whereupon immediately his living ſhall be taken away from him, ſaving a little

to find himſelf and his wife on, and he may not once repine thereat: but for anſwer he will ſay, that he hath nothing, but it is God's and the duke's grace's, and cannot ſay, as we the common people in England ſay, if we have any thing, that it is God's and our own. Men may ſay, that theſe men are in wonderful great awe, and obedience, that thus one muſt give and grant his goods which he hath been ſcraping and ſcratching for all his life to be at his prince's pleaſure and commandment. Oh that our ſturdy rebels were had in the like ſubjection to know their duty towards their princes. They may not ſay, as ſome knaves in England ſay, I would find the queen a man to ſerve in my place, or make his friends tarry at home, if money have the upper hand. No, no, it is not ſo in this country: for he ſhall make humble ſuit to ſerve the duke. And whom he ſendeth moſt to the wars he thinketh he is moſt in his favour: and yet as I before have ſaid, he giveth no wages. If they knew their ſtrength, no man were able to make match with them: nor they that dwell near them ſhould have any reſt of them. But I think it is not God's will: for I may compare them to a young horſe that knoweth not his ſtrength, whom a little child ruleth and guideth with a bridle, for all his great ſtrength: for if he did, neither child nor man could rule him. Their wars are holden againſt the Crimme Tartarians and the Nagaians.

I will ſtand no longer in the rehearſal of their power and wars. For it were too tedious to the reader. But I will in part declare their laws and puniſhments, and the execution of juſtice. And firſt I will begin with the commons of the country; which the gentlemen have rule on: and that is, that every gentleman hath rule and juſtice upon his own tenants. And if it ſo fall out that two gentlemen's ſervants or tenants do diſagree, the two gentlemen examine the matter, and have the parties before them, and ſo give the ſentence. And yet cannot they make the end betwixt them of the controverſy, but either of the gentlemen muſt bring his ſervant or tenant before the high judge or juſtice of that country, and there preſent them, and declare the matter and caſe. The plaintiff ſaith, I require the law; which is granted: then cometh an officer and arreſteth the party defendant, and uſeth him contrary to the laws of England. For when they attach any man they beat him about the legs, until ſuch time as he findeth ſureties to anſwer the matter: and if not, his hands and neck are bound together, and he is led about the town, and beaten about the legs, with other extreme puniſhments, till he come to his anſwer: and the juſtice demandeth if it be for debt, and ſaith: oweſt thou this man any ſuch debt? He will perhaps ſay nay. Then ſaith the judge: art thou able to deny it? Let us hear how. By oath, ſaith the defendant. Then he commandeth to leave beating him, till further trial be had.

Their order in one point is commendable. They have no man of law to plead their cauſes in any court; but every man pleadeth his own cauſe, and giveth bill and anſwer in writing, contrary to the order in England. The complaint is in manner of a ſupplication, and made to the duke's grace; and delivered him into his own hand, requiring to have juſtice, as in his complaint is alleged.

The duke giveth ſentence himſelf upon all matters in the law: which is very commendable, that ſuch a prince will take pains to ſee miniſtration of juſtice. Yet notwithſtanding it is wonderfully abuſed; and thereby the duke is much deceived. But if it fall out that the officers be eſpied in cloaking the truth, they have moſt condign puniſhment. And if the plaintiff can nothing prove, then the defendant muſt take his oath upon the crucifix whether he be in the right or no. Then is demanded if the plaintiff be any thing able farther to make proof: if he be not, then ſometimes he will ſay, I am able to prove it by my body and hands, or by my champion's body, ſo requiring

quiring the camp. After the other hath his oath, it is granted as well to the one as to the other. So when they go to the field, they ſwear upon the crucifix, that they be both in the right, and that the one ſhall make the other to confeſs the truth before they depart forth of the field: and ſo they go both to the battle armed with ſuch weapons as they uſe in that country: they fight all on foot, and ſeldom the parties themſelves do fight, except they be gentlemen. For they ſtand much upon their reputation, for they will not fight, but with ſuch as are come of as good an houſe as themſelves. So that if either party require the combat, it is granted unto them, and no champion is to ſerve in their room: wherein is no deceit: but otherwiſe by champions there is. For although they take great oaths upon them to do the battle truly, yet is the contrary often ſeen: becauſe the common champions have none other living. And as ſoon as the one party hath gotten the victory, he demandeth the debt, and the other is carried to priſon, and there is ſhamefully uſed till he take order. There is alſo another order in the law, that the plaintiff may ſwear in ſome cauſes of debt. And if the party defendant be poor, he ſhall be ſet under the crucifix, and the party plaintiff muſt ſwear over his head; and when he hath taken his oath, the duke taketh the party defendant home to his houſe, and uſeth him as his bondman, and putteth him to labour, or letteth him for hire to any ſuch as need him, until ſuch time as his friends make proviſion for his redemption: or elſe he remaineth in bondage all the days of his life. Again, there are many that will ſell themſelves to gentlemen or merchants to be their bondmen, to have during their life. meat, drink, and cloth, and at their coming to have a piece of money. Yea, and ſome will ſell their wives and children to be bawds and drudges to the buyer. Alſo, they have a law for felons and pickers contrary to the laws of England. For by their law they can hang no man for his firſt offence; but may keep him long in priſon, and oftentimes beat him with whips and other puniſhment: and there he ſhall remain until his friends be able to bail him. If he be a picker or a cut-purſe, as there be very many, the ſecond time he is taken, he hath a piece of his noſe cut off, and is burned in the forehead, and kept in priſon till he find ſureties for his good behaviour. And if he be taken the third time, he is hanged. And at the firſt time he is extremely puniſhed and not releaſed, except he have very good friends, or that ſome gentleman require to have him to the wars: and in ſo doing he ſhall enter into great bonds for him: by which means the country is brought into good quietneſs. But they be naturally given to great deceit, except extreme beating did bridle them. They be naturally given to hard living as well in fare as in lodging. I heard a Ruſſian ſay, that it was a great deal merrier living in priſon than forth, but for the great beating. For they have meat and drink without any labour, and get the charity of well-diſpoſed people: but being at liberty they get nothing. The poor is very innumerable, and live moſt miſerably: for I have ſeen them eat the pickle of herring and other ſtinking fiſh; nor the fiſh cannot be ſo ſtinking nor rotten, but they will eat it, and praiſe it to be more wholeſome than other fiſh or freſh meat. In mine opinion there be no ſuch people under the ſun for their hardneſs of living. Well, I will leave them in this point, and will in part declare their religion. They do obſerve the law of the Greeks with ſuch exceſs of ſuperſtition, as the like hath not been heard of. They have no graven images in their churches, but all painted, to the intent they will not break the commandment: but to their painted images they uſe ſuch idolatry, that the like was never heard of in England. They will neither worſhip nor honour any image that is made forth of their own country. For their own images (ſay they) have pictures to declare, what they be, and how they be of God, and ſo be not ours. They

ſay, look how the painter or carver hath made them, ſo we do worſhip them; and they worſhip none before they be chriſtened. They ſay we be but half chriſtians: becauſe we obſerve not part of the old law with the Turks. Therefore they call themſelves more holy than us. They have none other learning but their mother tongue, nor will ſuffer no other in their country among them. All their ſervice in churches is in their mother tongue. They have the Old and New Teſtament, which are daily read among them: and yet their ſuperſtition is no leſs. For when the prieſts do read, they have ſuch tricks in their reading, that no man can underſtand them, nor no man giveth ear to them. For all the while the prieſt readeth, the people ſit down, and one talk with another. But when the prieſt is at ſervice no man ſitteth, but gaggle and duck like ſo many geeſe. And as for their prayers, they have but little ſkill, but uſe to ſay *As bodi pomele:* as much to ſay, Lord have mercy upon me. For the tenth man within the land cannot ſay the Pater Noſter. And as for the creed, no man may be ſo bold as to meddle therewith but in the church: for they ſay it ſhould not be ſpoken of, but in the churches. Speak to them of the commandments, and they will ſay they were given to Moſes in the law which Chriſt hath now abrogated by his precious death and paſſion; therefore (ſay they) we obſerve little or none thereof. And I do believe them. For if they were examined of their law and commandments together, they ſhould agree but in few points. They have the ſacrament of the Lord's Supper, in both kinds, and more ceremonies than we have. They preſent them in a diſh in both kinds together, and carry them round about the church upon the prieſt's head, and ſo do miniſter at all ſuch times, as any ſhall require. They be great offerers of candles, and ſometimes of money, which we call in England, Soul-pence, with more ceremonies than I am able to declare. They have four Lents in the year, whereof our Lent is the greateſt. Look, as we do begin on the Wedneſday, ſo they do on the Monday before, and the week before that they call the Butter-week; and in that week they eat nothing but butter and milk. Howbeit I believe there be in no other country the like people for drunkenneſs. The next Lent is called Saint Peter's Lent, and beginneth always the Monday next after Trinity Sunday, and endeth on Saint Peter's even. If they ſhould break that faſt, their belief is, that they ſhould not come in at heaven gates. And when any of them die, they haveth a teſtimonial with them in the coffin, that when the ſoul cometh to heaven gates it may deliver the ſame to Saint Peter, which declareth that the party is a true and holy Ruſſian. The third Lent beginneth fifteen days before the later Lady-day, and endeth on our Lady-even. The fourth Lent beginneth on Saint Martin's-day, and endeth on Chriſtmas-even: which Lent is faſted for Saint Philip, Saint Peter, Saint Nicholas, and Saint Clement. For they four be the principal and greateſt ſaints in that country. In theſe Lents they eat neither butter, eggs, milk, nor cheeſe; but they are very ſtraitly kept with fiſh, cabbages, and roots. And out of their Lents they obſerve truly the Wedneſdays and Fridays throughout the year; and on the Saturday they do eat fleſh. Furthermore they have a great number of religious men; which are black monks, and they eat no fleſh throughout the year, but fiſh, milk, and butter. By their order they ſhould eat no freſh fiſh, and in their Lents they eat nothing but coleworts, cabbages, ſalt cucumbers, with other roots, as radiſh and ſuch like. Their drink is like our penny ale, and is called *quaſs*. They have ſervice daily in their churches, and uſe to go to ſervice two hours before day, and that is ended by daylight. At nine of the clock they go to maſs: that ended, to dinner; and after that to ſervice again; and then to ſupper: you ſhall underſtand that at every dinner and

ſupper

ſupper they have declared the expoſition of the Goſpel that day: but how they wreſt and twine the Scripture, and that together by report it is wonderful. As for whoredom and drunkenneſs there be none ſuch living; and for extortion they be the moſt abominable under the ſun. Now judge of their holineſs. They have twice as much land as the duke himſelf hath: but yet he is reaſonable even with them, as thus: when they take bribes of any of the poor and ſimple, he hath it by an order; when the abbot of any of their houſes dieth, then the duke hath all his goods, moveable and immoveable: ſo that the ſucceſſor buyeth all at the duke's hands: and by this mean they be the beſt fermers the duke hath. Thus with their religion I make an end, truſting hereafter to know it better.

To the right worſhipful and my ſingular good uncle, Maſter Chriſtopher Frothingham, give theſe.

Sir, read and correct;
For great is the defect.

The teſtimony of M. Richard Eden, in his Decades, concerning the book following:

And whereas, (ſaith he), I have before made mention how Moſcovy was in our time diſcovered by Richard Chancelor, in his voyage toward Cathay, by the direction and information of M. Sebaſtian Cabota, who long before had this ſecret in his mind; I ſhall not need here to deſcribe that voyage, foraſmuch as the fame is largely and faithfully written in the Latin tongue by that learned young man Clement Adams, ſchoolmaſter to the queen's henſhmen, as he received it at the mouth of the ſaid Richard Chancelor.

The new navigation and diſcovery of the kingdom of Moſcovia, by the north-eaſt, in the year 1553: *enterpriſed by Sir Hugh Willoughbie, knight, and performed by Richard Chancelor, pilot major of the voyage: written in Latin by Clement Adams.*

AT what time our merchants perceived the commodities and wares of England to be in ſmall requeſt with the countries and people about us, and near unto us, and that thoſe merchandiſes which ſtrangers in the time and memory of our anceſtors did earneſtly ſeek and deſire, were now neglected, and the price thereof abated, although by us carried to their own ports, and all foreign merchandiſes in great account, and their prices wonderfully raiſed: certain grave citizens of London, and men of great wiſdom, and careful for the good of their country, began to think with themſelves, how this miſchief might be remedied. Neither was a remedy (as it then appeared) wanting to their deſires, for the avoiding of ſo great an inconvenience: for ſeeing that the wealth of the Spaniards and Portingales, by the diſcovery and ſearch of new trades and countries, was marvellouſly increaſed, ſuppoſing the ſame to be a courſe and mean for them alſo to obtain the like, they thereupon reſolved upon a new and ſtrange navigation. And whereas at the ſame time one Sebaſtian Cabota, a man in thoſe days very renowned, happened to be in London, they began firſt of all to deal and conſult diligently with him, and after much ſpeech and conference together, it was at laſt concluded that three ſhips ſhould be prepared and furniſhed out, for the ſearch and diſcovery of the northern part of the world, to open a way and paſſage to our men for travel to new and unknown kingdoms.

And

And whereas many things ſeemed neceſſary to be regarded in this ſo hard and difficult a matter, they firſt made choice of certain grave and wiſe perſons in manner of a ſenate or company, which ſhould lay their heads together and give their judgments, and provide things requiſite and profitable for all occaſions: by this company it was thought expedient; that a certain ſum of money ſhould publickly be collected to ſerve for the furniſhing of ſo many ſhips. And leſt any private man ſhould be too much oppreſſed and charged, a courſe was taken, that every man willing to be of the ſociety ſhould diſburſe the portion of twenty and five pounds a-piece: ſo that in ſhort time by this means the ſum of ſix thouſand pounds being gathered, the three ſhips were bought, the moſt part whereof they provided to be newly built and trimmed. But in this action, I know not whether I may more admire the care of the merchants, or the diligence of the ſhipwrights: for the merchants they get very ſtrong and well-ſeaſoned planks for the building; the ſhipwrights, they with daily travail, and their greateſt ſkill, do fit them for the diſpatch of the ſhips: they calk them, pitch them, and among the reſt, they make one moſt ſtaunch and firm, by an excellent and ingenious invention. For they had heard that in certain parts of the ocean, a kind of worms is bred, which many times pierceth and eateth through the ſtrongeſt oak that is: and therefore that the mariners, and the reſt to be employed in this voyage might be free and ſafe from this danger, they cover a piece of the keel of the ſhip with thin ſheets of lead: and having thus built the ſhips, and furniſhed them with armour and artillery, then followed a ſecond care no leſs troubleſome and neceſſary than the former, namely, the proviſion of victuals, which was to be made according to the time and length of the voyage. And whereas they afore determined to have the eaſt part of the world ſailed unto, and yet that the ſea towards the ſame was not open, except they kept the northern tract, whereas yet it was doubtful whether there were any paſſage yea or no, they reſolved to victual the ſhips for eighteen months; which they did for this reaſon. For our men being to paſs that huge and cold part of the world, they wiſely foreſeeing it, allow them ſix months victual to ſail to the place, ſo much more to remain there if the extremity of the winter hindred their return, and ſo much more alſo for the time of their coming home.

Now this proviſion being made and carried aboard, with armour and munition of all ſorts, ſufficient captains and governors of ſo great an enterpriſe were as yet wanting; to which office and place, although many men, (and ſome void of experience) offered themſelves, yet one Sir Hugh Willoughbie, a moſt valiant gentleman, and well born, very earneſtly requeſted to have that care and charge committed unto him: of whom before all others, both by reaſon of his goodly perſonage (for he was of a tall ſtature) as alſo for his ſingular ſkill in the ſervices of war, the company of the merchants made greateſt accompt: ſo that at the laſt they concluded and made choice of him for the general of this voyage, and appointed to him the admiral, with authority and command over all the reſt. And for the government of other ſhips, although divers men ſeemed willing, and made offers of themſelves thereunto, yet by a common conſent one Richard Chancelor, a man of great eſtimation for many good parts of wit in him, was elected, in whom alone great hope for the performance of this buſineſs reſted. This man was brought up by one Maſter Henry Sydney, a noble young gentleman, and very much beloved of King Edward, who at this time coming to the place where the merchants were gathered together, began a very eloquent ſpeech or oration, and ſpake to them after this manner following:

"My

"My very worſhipful friends, I cannot but greatly commend your preſent godly and virtuous intention, in the ſerious enterpriſing (for the ſingular love you bear to your country) a matter, which (I hope) will prove profitable for this nation, and honourable to this our land. Which intention of yours we alſo of the nobility are ready to our power to help and further; neither do we hold any thing ſo dear and precious unto us, which we will not willingly forego, and lay out in ſo commendable a cauſe. But principally I rejoice in myſelf, that I have nouriſhed and maintained that wit, which is like by ſome means and in ſome meaſure, to profit and ſteed you in this worthy action. But yet I would not have you ignorant of this one thing, that I do now part with Chancelor, not becauſe I make little reckoning of the man, or that his maintenance is burdenous and chargeable unto me, but that you might conceive and underſtand my good will and promptitude for the furtherance of this buſineſs, and that the authority and eſtimation which he deſerveth may be given him. You know the man by report, I by experience; you by words, I by deeds; you by ſpeech and company, but I by the daily trial of his life have a full and perfect knowledge of him. And you are alſo to remember, into how many perils for your ſakes, and his country's love, he is now to run: whereof it is requiſite that we be not unmindful, if it pleaſe God to ſend him good ſucceſs. We commit a little money to the chance and hazard of fortune: he commits his life (a thing to a man of all things the moſt dear) to the raging ſea, and the uncertainties of many dangers. We ſhall here live and reſt at home quietly with our friends, and acquaintance: but he in the mean time labouring to keep the ignorant and unruly mariners in good order and obedience, with how many cares ſhall he trouble and vex himſelf? with how many troubles ſhall he break himſelf? and how many diſquietings ſhall he be forced to ſuſtain? We ſhall keep our own coaſts and country: he ſhall ſeek ſtrange and unknown kingdoms. He ſhall commit his ſafety to barbarous and cruel people, and ſhall hazard his life amongſt the monſtrous and terrible beaſts of the ſea. Wherefore in reſpect of the greatneſs of the dangers, and the excellency of his charge, you are to favour and love the man thus departing from us: and if it fall ſo happily out that he return again, it is your part and duty alſo liberally to reward him."

After that this noble young gentleman had delivered this, or ſome ſuch like ſpeech, much more eloquently than I can poſſibly report it, the company then preſent began one to look upon another, one to queſtion and confer with another: and ſome (to whom the virtue and ſufficiency of the man was known) began ſecretly to rejoice with themſelves; and to conceive a ſpecial hope, that the man would prove in time, very rare and excellent, and that his virtues, already appearing and ſhining to the world, would grow to the great honour and advancement of this kingdom.

After all this, the company growing to ſome ſilence, it ſeemed good to them that were of greateſt gravity amongſt them, to inquire, ſearch, and ſeek what might be learned and known concerning the eaſterly part or tract of the world. For which cauſe two Tartarians, which were then of the king's ſtable, were ſent for, and an interpreter was gotten to be preſent, by whom they were demanded touching their country, and the manners of their nation. But they were able to anſwer nothing to the purpoſe; being indeed more acquainted (as one there merrily and openly ſaid) to toſs pots, than to learn the ſtates and diſpoſitions of people. But after much ado, and many things paſſed about this matter, they grew at laſt to this iſſue, to ſet down and appoint a time for the departure of the ſhips: becauſe divers were of opinion, that a great part of the beſt time of the year was already ſpent, and if the delay grew longer, the way

would be ſtopped and barred by the force of the ice, and the cold climate: and therefore it was thought beſt by the opinion of them all, that by the tenth day of May, the captains and mariners ſhould take ſhipping, and depart from Ratcliffe upon the ebbe, if it pleaſed God. They having ſaluted their acquaintance, one his wife, another his children, another his kinsfolks, and another his friends dearer than his kinsfolks, were preſent and ready at the day appointed: and having weighed anchor, they departed with the turning of the water, and ſailing eaſily, came firſt to Greenwich. The greater ſhips are towed down with boats, and oars, and the mariners being all apparelled in watchet or ſky-coloured cloth, rowed amain, and made away with diligence. And being come near to Greenwich, (where the court then lay) preſently on the news thereof, the courtiers came running out, and the common people flocked together, ſtanding very thick upon the ſhore; the privy council they looked out at the windows of the court, and the reſt ran up to the tops of the towers: the ſhips hereupon diſcharge their ordnance, and ſhoot off their pieces after the manner of war, and of the ſea, inſomuch that the tops of the hills ſounded therewith, the vallies and the waters gave an echo, and the mariners they ſhouted in ſuch ſort that the ſky rang again with the noiſe thereof. One ſtood in the poop of the ſhip, and by his geſture bids farewell to his friends in the beſt manner he could. Another walks upon the hatches, another climbs the ſhrouds, another ſtands upon the main yard, and another in the top of the ſhip. To be ſhort, it was a very triumph (after a ſort) in all reſpects to the beholders. But (alas!) the good King Edward (in reſpect of whom principally all this was prepared) he only by reaſon of his ſickneſs was abſent from this ſhew, and not long after the departure of theſe ſhips, the lamentable and moſt ſorrowful accident of his death followed.

But to proceed in the matter.

The ſhips going down with the tide, came at laſt to Woolwich, where they ſtayed and caſt anchor, with purpoſe to depart therehence again as ſoon as the turning of the water, and a better wind ſhould draw them to ſet ſail. After this they departed and came to Harwich, in which port they ſtaid long, not without great loſs and conſuming of time: yet at the laſt with a good wind they hoiſted up ſail, and committed themſelves to the ſea, giving their laſt adieu to their native country, which they knew not whether they ſhould ever return to ſee again or not. Many of them looked oftentimes back, and could not refrain from tears, conſidering into what hazards they were to fall, and what uncertainties of the ſea they were to make trial of.

Amongſt the reſt, Richard Chancelor, the captain of the Edward Bonaventure, was not a little grieved with the fear of wanting victuals, part whereof was found to be corrupt and putrified at Harwich, and the hogſheads of wine alſo leaked, and were not ſtaunch: his natural and fatherly affection alſo ſomewhat troubled him; for he left behind him his two little ſons, which were in the caſe of orphans if he ſped not well; the eſtate alſo of his company moved him to care, being in the former reſpects after a ſort unhappy, and were to abide with himſelf every good or bad accident: but in the mean time while his mind was thus tormented with the multiplicity of ſorrows and cares, after many days ſailing, they kenned land afar off, whereunto the pilot directed the ſhips; and being come to it, they land, and find it to be Roſt Iſland, where they ſtayed certain days, and afterwards ſet ſail again, and proceeding towards the north, they eſpied certain other iſlands, which were called the Croſs-of-Iſlands. From which places when they were a little departed, Sir Hugh Willoughby the general, a man of good foreſight and providence in all his actions, erected and

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ſet out his flag, by which he called together the chiefeſt men of the other ſhips, that by the help and aſſiſtance of their counſels, the order of the government and the conduction of the ſhips in the whole voyage might be the better: who being come together accordingly, they conclude and agree, that if any great tempeſt ſhould ariſe at any time, and happen to diſperſe and ſcatter them, every ſhip ſhould endeavour his beſt to go to Wardhouſe, a haven or caſtle of ſome name in the kingdom of Norway, and that they that arrived there firſt in ſafety, ſhould ſtay and expect the coming of the reſt.

The very ſame day in the afternoon, about four of the clock, ſo great a tempeſt ſuddenly aroſe, and the ſeas were ſo outrageous, that the ſhips could not keep their intended courſe, but ſome were per force driven one way, and ſome another way, to their great peril and hazard: the general with his loudeſt voice cried out to Richard Chancelor, and earneſtly requeſted him not to go far from him; but he neither would nor could keep company with him, if he ſailed ſtill ſo faſt: for the admiral was of better ſail than his ſhip. But the ſaid admiral (I know not by what means) bearing all his ſails, was carried away with ſo great force and ſwiftneſs that not long after he was quite out of ſight, and the third ſhip alſo with the ſame ſtorm and like rage was diſperſed and loſt us.

The ſhip boat of the admiral, (ſtriking againſt the ſhip,) was overwhelmed in the ſight and view of the mariners of the Bonaventure: and as for them that are already returned and arrived, they know nothing of the reſt of the ſhips what was become of them.

But if it be ſo, that any miſerable miſhap have overtaken them, if the rage and fury of the ſea have devoured thoſe good men, or if as yet they live, and wander up and down in ſtrange countries, I muſt needs ſay they were men worthy of better fortune, and if they be living, let us wiſh them ſafety and a good return: but if the cruelty of death hath taken hold of them, God ſend them a chriſtian grave and ſepulchre.

Now Richard Chancelor, with his ſhip and company, being thus left alone, and become very penſive, heavy, and ſorrowful, by this diſperſion of the fleet, he (according to the order before taken) ſhapeth his courſe for Wardhouſe in Norway, there to expect and abide the arrival of the reſt of the ſhips. And being come thither, and having ſtaid there the ſpace of ſeven days, and looked in vain for their coming, he determined at length to proceed alone in the purpoſed voyage. And as he was preparing himſelf to depart, it happened that he fell in company and ſpeech with certain Scottiſhmen; who having underſtanding of his intention, and wiſhing well to his actions, began earneſtly to diſſuade him from the further proſecution of the diſcovery, by amplifying the dangers which he was to fall into, and omitted no reaſon that might ſerve to that purpoſe. But he holding nothing ſo ignominious and reproachful, as inconſtancy and levity of mind, and perſuading himſelf that a man of valour could not commit a more diſhonourable part than for fear of danger to avoid and ſhun great attempts, was nothing at all changed or diſcouraged with the ſpeeches and words of the Scots, remaining ſtedfaſt and immutable in his firſt reſolution; determining either to bring that to paſs which was intended, or elſe to die the death.

And as for them which were with Maſter Chancelor in his ſhip, although they had great cauſe of diſcomfort by the loſs of their company (whom the foreſaid tempeſt had ſeparated from them,) and were not a little troubled with cogitations and perturbations of mind, in reſpect of their doubtful courſe; yet notwithſtanding they were of ſuch

conſent and agreement of mind with Maſter Chancelor, that they were reſolute, and prepared under his direction and government, to make proof and trial of all adventures, without all fear or miſtruſt of future dangers. Which conſtancy of mind in all the company did exceedingly increaſe their captain's carefulneſs; for he being ſwallowed up with like good will and love towards them, feared leſt through any error of his, the ſafety of the company ſhould be endangered. To conclude, when they ſaw their deſire and hope of the arrival of the reſt of the ſhips to be every day more and more fruſtrated, they provided to ſea again, and Maſter Chancelor held on his courſe towards that unknown part of the world, and ſailed ſo far, that he came at laſt to the place where he found no night at all, but a continual light and brightneſs of the ſun ſhining clearly upon the huge and mighty ſea. And having the benefit of this perpetual light for certain days, at the length it pleaſed God to bring them into a certain great bay, which was of one hundred miles or thereabouts over. Whereinto they entered, and ſomewhat far within it caſt anchor, and looking every way about them, it happened that they eſpied afar off a certain fiſher boat, which Maſter Chancelor, accompanied with a few of his men, went towards to common with the fiſhermen that were in it, and to know of them what country it was, and what people, and of what manner of living they were: but they being amazed with the ſtrange greatneſs of his ſhip, (for in thoſe parts before that time they had never ſeen the like,) began preſently to avoid and to flee: but he ſtill following them at laſt overtook them, and being come to them, they (being in great fear, as men half-dead) proſtrated themſelves before him, offering to kiſs his feet: but he (according to his great and ſingular courteſy,) looked pleaſantly upon them, comforting them by ſigns and geſtures, refuſing thoſe duties and reverences of theirs, and taking them up in all loving ſort from the ground. And it is ſtrange to conſider how much favour afterwards in that place this humanity of his did purchaſe to himſelf. For they being diſmiſſed, ſpread by and by a report abroad of the arrival of a ſtrange nation, of a ſingular gentleneſs and courteſy: whereupon the common people came together offering to theſe new come gueſts victuals freely, and not refuſing to traffic with them, except they had been bound by a certain religious uſe and cuſtom, not to buy any foreign commodities, without the knowledge and conſent of the king.

By this time our men had learned that this country was called Ruſſia or Moſcovy, and that Juan Vaſiliwich (which was at that time their king's name) ruled and governed far and wide in thoſe places. And the barbarous Ruſſes aſked likewiſe of our men, whence they were, and what they came for: whereunto anſwer was made, that they were Engliſhmen ſent into thoſe coaſts, from the moſt excellent King Edward the Sixth, having from him in commandment, certain things to deliver to their king, and ſeeking nothing elſe but his amity and friendſhip, and traffic with his people, whereby they doubted not, but that great commodity and profit would grow to the ſubjects of both kingdoms.

The barbarians heard theſe things very gladly, and promiſed their aid and furtherance to acquaint their king out of hand with ſo honeſt and a reaſonable requeſt.

In the meantime Maſter Chancelor entreated victuals for his money of the governor of that place, (who together with others came aboard him,) and required hoſtages of them likewiſe for the more aſſurance of ſafety to himſelf and his company. To whom the governors anſwered, that they knew not in that caſe the will of their king, but yet were willing in ſuch things as they might lawfully do, to pleaſure him: which was as then to afford him the benefit of victuals.

Now

Now while theſe things were a doing, they ſecretly ſent a meſſenger unto the emperor, to certify him of the arrival of a ſtrange nation, and withal to know his pleaſure concerning them. Which meſſage was very welcome unto him, inſomuch that voluntarily he invited them to come to his court. But if by reaſon of the tedioufneſs of ſo long a journey, they thought it not beſt ſo to do, then he granted liberty to his ſubjects to bargain, and to traffic with them: and further promiſed, that if it would pleaſe them to come to him, he himſelf would bear the whole charges of poſt horſes. In the meantime the governors of the place deferred the matter from day to day, pretending divers excuſes, and ſaying one while that the conſent of all the governors, and another while, that the great and weighty affairs of the kingdom compelled them to defer their anſwer: and this they did of purpoſe, ſo long to protract the time, until the meſſenger (ſent before to the king) did return with relation of his will and pleaſure.

But maſter Chancelor, (ſeeing himſelf held in this ſuſpenſe with long and vain expectation, and thinking that of intention to delude him, they poſted the matter off ſo often,) was very inſtant with them to perform their promiſe; which if they would not do, he told them that he would depart and proceed in his voyage. So that the Moſcovites (although as yet they knew not the mind of their king,) yet fearing the departure indeed of our men who had ſuch wares and commodities as they greatly deſired, they at laſt reſolved to furniſh our people with all things neceſſary, and conduct them by land to the preſence of their king. And ſo maſter Chancelor began his journey, which was very long and moſt troubleſome, wherein he had the uſe of certain ſleds, which in that country are very common, for they are carried themſelves upon ſleds, and all their carriages are in the ſame ſort, the people almoſt not knowing any other manner of carriage, the cauſe whereof is the exceeding hardneſs of the ground congealed in the winter time by the force of the cold, which in thoſe places is very extreme and horrible, whereof hereafter we will ſay ſomething.

But now they having paſſed the greater part of their journey, met at laſt with the ſleddeman (of whom I ſpake before) ſent to the king ſecretly from the juſtices or governors, who by ſome ill hap had loſt his way, and had gone to the ſea ſide, which is near to the country of the Tartars, thinking there to have found our ſhip. But having long erred and wandered out of his way, at the laſt in his direct return, he met (as he was coming) our captain on the way. To whom he by and by delivered the emperor's letters, which were written to him with all courteſy and in the moſt loving manner that could be: wherein expreſs commandment was given, that poſt horſes ſhould be gotten for him and the reſt of his company without any money. Which thing was of all the Ruſſes in the reſt of their journey ſo willingly done, that they began to quarrel, yea, and to fight alſo in ſtriving and contending which of them ſhould put their poſt horſes to the ſledde: ſo that after much ado and great pains taken in this long and weary journey, (for they had travelled very near fifteen hundred miles,) maſter Chancelor came at laſt to Moſco the chief city of the kingdom, and the ſeat of the king: of which city, and of the emperor himſelf, and of the principal cities of Moſcovy we will ſpeak immediately more at large in this diſcourſe.

Of Moſcovy, which is alſo called Ruſſia.

Moſcovy, which hath the name alſo of Ruſſia the White, is a very large and ſpacious country, every way bounded with divers nations. Towards the South and the Eaſt, it is compaſſed with Tartaria: the northern ſide of it ſtretcheth to the Scythian ocean: upon

upon the weſt part border the Lappians, a rude and ſavage nation, living in woods, whoſe language is not known to any other people: next unto theſe, more towards the ſouth is Swecia, then Finlandia, then Livonia, and laſt of all Lituania. This country of Moſcovy hath alſo very many and great rivers in it, and is mariſh ground in many places: and as for the rivers, the greateſt and moſt famous amongſt all the reſt, is that, which the Ruſſes in their own tongue call Volga; but others know it by the name of Rha. Next unto it in fame is Tanais, which they call Don, and the third Boriſthenes which at this day they call Neper. Two of theſe, to wit, Rha and Boriſthenes iſſuing both out of one fountain, run very far through the land: Rha receiving many other pleaſant rivers into it, and running from the very head or ſpring of it, towards the eaſt, after many crooked turnings and windings, diſchargeth itſelf, and all the other waters and rivers that fall into it by divers paſſages into the Caſpian Sea. Tanais ſpringing from a fountain of great name in thoſe parts, and growing great near to his head, ſpreads itſelf at length very largely, and makes a great lake: and then growing narrow again, doth ſo run for certain miles, until it falleth into another lake, which they call Juan: and therehence fetching a very crooked courſe, comes very near to the river Volga: but diſdaining as it were the company of any other river, doth there turn itſelf again from Volga, and runs towards the ſouth, and falls at laſt into the lake of Mæotis. Boriſthenes, which comes from the ſame head that Rha doth, (as we ſaid before) carrieth both itſelf, and other waters that are near unto it, towards the South, not refuſing the mixture of other ſmall rivers: and running by many great and large countries falls at laſt into Pontus Euxinus. Beſides theſe rivers, are alſo in Moſcovy certain lakes and pools, the lakes breed fiſh by the celeſtial influence: and amongſt them all, the chiefeſt and moſt principal is called Bealozera, which is very famous by reaſon of a very ſtrong town built in it, wherein the kings of Moſcovy reſerve and repoſe their treaſure in all time of war and danger.

Touching the Rhiphean mountains, whereupon the ſnow lieth continually, and where hence in times paſt it was thought that Tanais the river did ſpring, and that the reſt of the wonders of nature, which the Grecians feigned and invented of old, were there to be ſeen: our men which lately came from thence, neither ſaw them nor yet have brought home any perfect relation of them, although they remained there for the ſpace of three months, and had gotten in that time ſome intelligence of the language of Moſcovy. The whole country is plain and champion, and few hills in it: and towards the north hath very large and ſpacious woods, wherein is great ſtore of fir trees, a wood very neceſſary, and fit for the building of houſes: there are alſo wild beaſts bred in thoſe woods, as buffes, bears, and black wolves, and another kind of beaſt unknown to us, but called by them Roſſomakka; and the nature of the ſame is very rare and wonderful: for when it is great with young, and ready to bring forth, it ſeeketh out ſome narrow place between two ſtakes, and ſo going through them, preſſeth itſelf, and by that means is eaſed of her burden, which otherwiſe could not be done. They hunt their buffes for the moſt part a horſeback, but their bears a foot, with wooden forks. The north parts of the country are reported to be ſo cold, that the very ice or water which diſtilleth out of the moiſt wood which they lay upon the fire, is preſently congealed and frozen: the diverſity groweth ſuddenly to be ſo great, that in one and the ſelf ſame firebrand, a man ſhall ſee both fire and ice. When the winter doth once begin there, it doth ſtill more and more increaſe by a perpetuity of cold: neither doth that cold ſlack, until the force of the ſun beams doth diſſolve the cold, and make glad the earth, returning to it again. Our mariners which we left in the ſhip in

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the mean time to keep it, in their going up only from their cabins to the hatches, had their breath oftentimes ſo ſuddenly taken away, that they often fell down as men very near dead, ſo great is the ſharpneſs of that cold climate: but as for the ſouth parts of the country, they are ſomewhat more temperate.

Of Moſco the chief city of the kingdom, and of the Emperor thereof.

It remaineth that a larger diſcourſe be made of Moſco, the principal city of that country, and of the prince alſo, as before we have promiſed. The empire and government of the king is very large, and his wealth at this time exceeding great. And becauſe the city of Moſco is the chiefeſt of all the reſt, it ſeemeth of itſelf to challenge the firſt place in this diſcourſe. Our men ſay, that in bigneſs it is as great as the city of London with the ſuburbs thereof. There are many and great buildings in it, but for beauty and fairneſs, nothing comparable to ours. There are many towns and villages alſo, but built out of order, and with no handſomeneſs: their ſtreets and ways are not paved with ſtone as ours are: the walls of their houſes are of wood: the roofs for the moſt part are covered with ſhingle boards. There is hard by the city a very fair caſtle, ſtrong, and furniſhed with artillery, whereunto the city is joined directly towards the north, with a brick wall: the walls alſo of the caſtle are built with brick, and are in breadth or thickneſs eighteen feet. This caſtle hath on the one ſide a dry ditch, on the other ſide the river Moſcua, whereby it is made almoſt inexpugnable. The ſame Moſcua trending towards the eaſt doth admit into it the company of the river Occa.

In the caſtle aforeſaid, there are in number nine churches, or chaples, not altogether unhandſome, which are uſed and kept by certain religious men, over whom there is after a ſort, a patriarch, or governor, and with him other reverend fathers, all which for the greater part, dwell within the caſtle. As for the king's court and palace, it is not of the neateſt, only in form it is four ſquare, and of low building, much ſurpaſſed and excelled by the beauty and elegance of the houſes of the kings of England. The windows are very narrowly built, and ſome of them by glaſs, ſome other by lattices admit the light: and whereas the palaces of our princes are decked and adorned with hangings of cloth of gold, there is none ſuch there: they build and join to all their walls benches, and that not only in the court of the emperor, but in all private men's houſes.

Now after that they had remained about twelve days in the city, there was then a meſſenger ſent unto them, to bring them to the king's houſe: and they being after a ſort wearied with their long ſtay, were very ready and willing ſo to do: and being entered within the gates of the court, there ſat a very honourable company of courtiers, to the number of one hundred, all apparelled in cloth of gold, down to their ancles: and there hence being conducted into the chamber of preſence, our men began to wonder at the majeſty of the emperor: his ſeat was aloft, in a very royal throne, having on his head a diadem, or crown of gold, apparelled with a robe all of goldſmith's work, and in his hand he held a ſceptre garniſhed and beſet with precious ſtones: and beſides all other notes and appearances of honour, there was a majeſty in his countenance proportionable with the excellency of his eſtate: on the one ſide of him ſtood his chief ſecretary, on the other ſide, the great commander of ſilence, both of them arrayed alſo in cloth of gold; and then there ſat the council of one hundred and fifty in number, all in like ſort arrayed, and of great ſtate. This ſo honourable an aſſembly, ſo great a majeſty of the emperor, and of the place might very well have amazed our men, and

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have daſhed them out of countenance: but notwithſtanding Maſter Chancelor being therewithal nothing diſmayed, ſaluted and did his duty to the emperor, after the manner of England, and withal delivered unto him the letters of our king, Edward the ſixth. The emperor having taken and read the letters, began a little to queſtion with them, and to aſk them of the welfare of our king: whereunto our men anſwered him directly, and in few words: hereupon our men preſented ſomething to the emperor, by the chief ſecretary, which at the delivery of it, put off his hat, being afore all the time covered: and ſo the emperor having invited them to dinner, diſmiſſed them from his preſence: and going into the chamber of him that was maſter of the requeſts to the emperor, and having ſtaid there the ſpace of two hours, at the laſt the meſſenger cometh, and calleth them to dinner: they go, and being conducted into the golden court, (for ſo they call it, although not very fair,) they find the emperor ſitting upon an high and ſtately ſeat, apparelled with a robe of ſilver, and with another diadem on his head: our men being placed over againſt him, ſit down: in the midſt of the room ſtood a mighty cupboard upon a ſquare foot, whereupon ſtood alſo a round board, in manner of a diamond, broad beneath, and towards the top narrow, and every ſtep roſe up more narrow than another. Upon this cupboard was placed the emperor's plate, which was ſo much, that the very cupboard itſelf was ſcant able to ſuſtain the weight of it: the better part of all the veſſels, and goblets, was made of very fine gold: and among the reſt, there were four pots of very large bigneſs, which did adorn the reſt of the plate in great meaſure: for they were ſo high, that they thought them at the leaſt five feet long. There were alſo upon this cupboard certain ſilver caſks, not much differing from the quantity of our firkins, wherein was reſerved the emperor's *drink*: on each ſide of the hall ſtood four tables each of them laid and covered with very clean table cloths, whereunto the company aſcended by three ſteps or degrees: all which were filled with the aſſembly preſent: the gueſts were all apparelled with linen without, and with rich ſkins within, and ſo did notably ſet out this royal feaſt. The emperor, when he takes any bread or knife in his hand, doth firſt of all croſs himſelf upon his forehead: they that are in ſpecial favour with the emperor ſit upon the ſame bench with him, but ſomewhat far from him: and before the coming in of the meat, the emperor himſelf, according to an ancient cuſtom of the kings of Moſcovy, doth firſt beſtow a piece of bread upon every one of his gueſts, with a loud pronunciation of his title, and honour, in this manner; the great duke of Moſcovy, and chief emperor of Ruſſia, John Baſiliwich (and then the officer nameth the gueſt) doth give thee bread. Whereupon all the gueſts riſe up, and by and by ſit down again. This done the gentleman uſher of the hall comes in with a notable company of ſervants, carrying the diſhes, and having done his reverence to the emperor puts a young ſwan in a golden platter upon the table, and immediately takes it thence again, delivering it to the carver, and ſeven other of his fellows, to be cut up: which being performed, the meat is then diſtributed to the gueſts, with the like pomp and ceremonies. In the mean time, the gentleman uſher receives his bread, and taſteth to the emperor, and afterward, having done his reverence, he departeth. Touching the reſt of the diſhes, becauſe they were brought in out of order, our men can report no certainty: but this is true, that all the furniture of diſhes, and drinking veſſels, which were then for the uſe of a hundred gueſts, was all of pure gold, and the tables were ſo laden with veſſels of gold, that there was no room for ſome to ſtand upon them.

We may not forgot that there were one hundred and forty ſervitors arrayed in cloth of gold, that in the dinner time changed thrice their habit and apparel, which ſervitors

Drawn by Corbould.

Engraved by George Cooke.

Mr. Chancelor's first Audience of the Czar of Muscovy.

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are in like ſort ſerved with bread from the Emperor, as the reſt of the gueſts. Laſt of all, dinner being ended, and candles brought in, (for by this time night was come) the Emperor calleth all his gueſts and noblemen by their names, in ſuch ſort, that it ſeems miraculous, that a prince otherwiſe occupied in great matters of eſtate, ſhould ſo well remember ſo many and ſundry particular names. The Ruſſes told our men, that the reaſon thereof, as alſo of the beſtowing of bread in that manner, was to the end that the Emperor might keep the knowledge of his own houſhold: and withal, that ſuch as are under his diſpleaſure, might by this means be known.

Of the diſcipline of war among the Ruſſes.

Whenſoever the injuries of their neighbours do call the King forth to battle, he never armeth a leſs number againſt the enemy than three hundred thouſand ſoldiers, one hundred thouſand whereof he carrieth out into the field with him, and leaveth the reſt in garriſon in ſome fit places, for the better ſafety of his empire. He preſſeth no huſbandman nor merchant; for the country is ſo populous, that theſe being left at home, the youth of the realm is ſufficient for all his wars. As many as go out to warfare do provide all things of their own coſt: they fight not on foot, but altogether on horſe-back: their armour is a coat of mail and a helmet: the coat of mail is gilded, or elſe adorned with ſilk, although it pertain to a common ſoldier: they have a great pride in ſhewing their wealth: they uſe bows and arrows, as the Turks do: they carry lances alſo into the field. They ride with a ſhort ſtirrup, after the manner of the Turks. They are a kind of people moſt ſparing in diet, and moſt patient in extremity of cold, above all others; for when the ground is covered with ſnow, and is grown terrible and hard with the froſt, this Ruſſe hangs up his mantle, or ſoldier's coat, againſt that part from whence the wind and ſnow drives, and ſo making a little fire, lieth down with his back towards the weather: this mantle of his ſerves him for his bed, wall, houſe and all: his drink is cold water of the river, mingled with oatmeal, and this is all his good cheer, and he thinketh himſelf well, and daintily fed therewith, and ſo ſitteth down by his fire, and upon the hard ground, roaſteth as it were his weary ſides thus daintily ſtuffed; the hard ground is his feather-bed, and ſome block or ſtone his pillow: and as for his horſe, he is as it were a chamber fellow with his maſter, faring both alike. How juſtly may this barbarous and rude Ruſſe condemn the daintineſs and niceneſs of our captains, who living in a ſoil and air much more temperate, yet commonly uſe furred boots and cloaks! But thus much of the furniture of their common ſoldiers. But thoſe that are of higher degrees come into the field a little better provided. As for the furniture of the Emperor himſelf, it is then above all other times moſt notable. The coverings of his tent, for the moſt part, are all of gold, adorned with ſtones of great price, and with the curious workmanſhip of plumaſiers. As often as they are to ſkirmiſh with the enemy, they go forth without any order at all: they make no wings, nor military diviſions of their men, as we do, but lying for the moſt part in ambuſh, do ſuddenly ſet upon the enemy. Their horſes can well abſtain two whole days from any meat: they feed upon the barks of trees, and the moſt tender branches, in all the time of war. And this ſcant and miſerable manner of living both the horſe and his maſter can well endure, ſometimes for the ſpace of two months, luſty and in good ſtate of body. If any man behave himſelf valiantly in the field, to the contentation of the Emperor, he beſtoweth upon him in recompenſe of his ſervice ſome farm, or ſo much ground as he and his may live upon, which notwithſtanding after his death returneth again to the Emperor, if he die without

a male iſſue. For although his daughters be never ſo many, yet no part of that inheritance comes to them, except peradventure the Emperor of his goodneſs give ſome portion of the land amongſt them, to beſtow them withal. As for the man, whoſoever he be, that is in this ſort rewarded by the Emperor's liberality, he is bound in a great ſum to maintain ſo many ſoldiers for the war when need ſhall require, as that land, in the opinion of the Emperor, is able to maintain. And all thoſe to whom any land falls by inheritance are in no better condition; for if they die without any male iſſue, all their lands fall into the hands of the emperor. And, moreover, if there be any rich man amongſt them, who in his own perſon is unfit for the wars, and yet hath ſuch wealth, that thereby many noblemen and warriors might be maintained, if any of the courtiers preſent his name to the Emperor, the unhappy man is by-and-bye ſent for, and in that inſtant deprived of all his riches, which with great pains and travail all his lifetime he hath gotten together; except perhaps ſome ſmall portion thereof be left him to maintain his wife, children, and family. But all this is done of all the people ſo willingly at the Emperor's commandment, that a man would think they rather make reſtitution of other men's goods, than give that which is their own to other men. Now the emperor having taken theſe goods into his hands, beſtoweth them among his courtiers according to their deſerts; and the oftener that a man is ſent to the wars, the more favour he thinketh is borne to him by the Emperor, although he go upon his own charge, as I ſaid before; ſo great is the obedience of all men generally to their prince.

Of the ambaſſadors of the Emperor of Moſcovy.

The Moſcovite, with no leſs pomp and magnificence than that which we have ſpoken of, ſends his ambaſſadors to foreign princes in the affairs of eſtate. For while our men were abiding in the city of Moſco, there were two ambaſſadors ſent to the King of Poland, accompanied with five hundred notable horſes, and the greater part of the men were arrayed in cloth of gold, and of ſilk, and the worſt apparel was of garments of blue colour, to ſpeak nothing of the trappings of the horſes, which were adorned with gold and ſilver, and very curiouſly embroidered: they had alſo with them one hundred white and fair ſpare horſes, to uſe them at ſuch times as any wearineſs came upon them. But now the time requireth me to ſpeak briefly of other cities of the Moſcovites, and of the wares and commodities that the country yieldeth.

Novogorode.

Next unto Moſco, the city of Novogorode is reputed the chiefeſt of Ruſſia; for although it be in majeſty inferior to it, yet in greatneſs it goeth beyond it. It is the chiefeſt and greateſt mart town of all Moſcovy: and albeit the Emperor's ſeat is not there, but at Moſco, yet the commodiouſneſs of the river, falling into that gulf, which is called Sinus Finnicus, whereby it is well frequented by merchants, makes it more famous than Moſco itſelf. This town excels all the reſt in the commodities of flax and hemp: it yields alſo hides, honey, and wax. The Flemings there ſometimes had a houſe of merchandiſe, but by reaſon that they uſed the like ill-dealing there, which they did with us, they loſt their privileges, a reſtitution whereof they earneſtly ſued for at the time that our men were there. But thoſe Flemings hearing of the arrival of our men in thoſe parts, wrote their letters to the Emperor againſt them, accuſing them for pirates and rovers, wiſhing him to detain and impriſon them. Which things when they were known of our men, they conceived fear that they ſhould never have returned home. But the Emperor

believing rather the king's letters, which our men brought, than the lying and falſe ſuggeſtions of the Flemings, uſed no ill intreaty towards them.

Yeraſlave.

Yeraſlave alſo is a town of ſome good fame, for the commodities of hides, tallow, and corn, which it yields in great abundance. Cakes of wax are there alſo to be ſold, although other places have greater ſtore. This Yeraſlave is diſtant from Moſco about two hundred miles; and betwixt them are many populous villages. Their fields yield ſuch ſtore of corn, that in conveying it towards Moſco, ſometimes in a forenoon, a man ſhall ſee ſeven hundred or eight hundred ſleds going and coming, laden with corn and ſalt fiſh: the people come a thouſand miles to Moſco to buy that corn, and then carry it away upon ſleds; and theſe are thoſe people that dwell in the north parts, where the cold is ſo terrible, that no corn doth grow there, or if it ſpring up, it never comes to ripeneſs. The commodities that they bring with them are ſalt fiſh, ſkins, and hides.

Vologda.

Vologda being from Moſco five hundred and fifty miles, yields the commodities of hemp and flax alſo; although the greateſt ſtore of flax is ſold at Novogorode.

Pleſco.

The town of Pleſco is frequented of merchants for the good ſtore of honey and wax that it yieldeth.

Colmagro.

The north parts of Ruſſia yield very rare and precious ſkins; and amongſt the reſt thoſe principally which we call ſables, worn about the necks of our noble women and ladies; it hath alſo martin's ſkins, white, black, and red fox ſkins, ſkins of hares, and ermines, and others, which they call and term barbarouſly, as beavers, minxes, and minivers. The ſea adjoining breeds a certain beaſt which they call the mors, which ſeeketh his food upon the rocks, climbing up with the help of his teeth. The Ruſſes uſe to take them for the great virtue that is in their teeth, whereof they make as great accompt as we do of the elephant's tooth. Theſe commodities they carry upon deers' backs to the town of Lampas, and from thence to Colmagro, and there in the winter time are kept great fairs for the ſale of them. This city of Colmagro ſerves all the country about it with ſalt and ſalt fiſh. The Ruſſians alſo of the north parts ſend thither oil, which they call trane, which they make in a river called Una, although it be alſo made elſewhere: and here they uſe to boil the water of the ſea, whereof they make very great ſtore of ſalt.

Of controverſies in Law, and how they are ended.

Having hitherto ſpoken ſo much of the chiefeſt cities of Ruſſia as the matter required, it remaineth that we ſpeak ſomewhat of the laws that the Moſcovites do uſe, as far forth as the ſame are come to our knowledge. If any controverſy ariſe among them, they firſt make their landlords judges in the matter; and if they cannot end it, then they prefer it to the magiſtrate. The plaintiff craveth of the ſaid magiſtrate that

he may have leave to enter law againſt his adverſary; and having obtained it, the officer fetcheth the defendant, and beateth him on the legs till he bring forth a ſurety for him; but if he be not of ſuch credit as to procure a ſurety, then are his hands by an officer tied to his neck, and he is beaten all the way till he come before the judge. The judge then aſketh him (as for example in the matter of debt) whether he oweth any thing to the plaintiff. If he denies it, then ſaith the judge, how canſt thou deny it? the defendant anſwereth, by an oath: thereupon the officer is commanded to ceaſe from beating of him, until the matter be further tried. They have no lawyers, but every man is his own advocate, and both the complaint of the accuſer, and the anſwer of the defendant, are in manner of petition delivered to the emperor, intreating juſtice at his hands. The emperor himſelf heareth every great controverſy, and upon the hearing of it giveth judgment, and that with great equity, which I take to be a thing worthy of ſpecial commendation in the majeſty of a prince. But although he do this with a good purpoſe of mind, yet the corrupt magiſtrates do wonderfully pervert the ſame; but if the emperor take them in any fault, he doth puniſh them moſt ſeverely. Now at the laſt, when each party hath defended his cauſe with his beſt reaſons, the judge demandeth of the accuſer whether he hath any more to ſay for himſelf; he anſwereth, that he will try the matter in fight by his champion, or elſe intreateth that in fight betwixt themſelves the matter may be ended; which being granted, they both fight it out: or if both of them, or either of them, ſeem unfit for that kind of trial, then they have public champions to be hired, which live by ending of quarrels. Theſe champions are armed with iron axes and ſpears, and fight on foot, and he whoſe champion is overcome, is by-and-bye taken and impriſoned, and terribly handled, until he agreeth with his adverſary. But if either of them be of any good calling and degree, and do challenge one another to fight, the judge granteth it; in which caſe they may not uſe public champions: and he that is of any good birth doth contemn the other, if he be baſely born, and will not fight with him. If a poor man happen to grow in debt, his creditor takes him and maketh him pay the debt, in working either to himſelf, or to ſome other man, whoſe wages he taketh up. And there are ſome among them that uſe willingly to make themſelves, their wives, and children, bond-ſlaves unto rich men, to have a little money at the firſt into their hands, and ſo for ever after content themſelves with meat and drink; ſo little accompt do they make of liberty.

Of Puniſhments upon Thieves.

If any man be taken upon committing of theft, he is impriſoned and often beaten, but not hanged for the firſt offence, as the manner is with us; and this they call the law of mercy. He that offendeth the ſecond time hath his noſe cut off, and is burned in the forehead with a hot iron. The third time he is hanged. There are many cut-purſes among them; and if the rigour of the prince did not cut them off, they could not be avoided.

Of their Religion.

They maintain the opinions of the Greek church: they ſuffer no graven images of ſaints in their churches, but their pictures painted in tables they have in great abundance, which they do adore and offer unto, and burn wax candles before them, and caſt holy water upon them without other honour. They ſay that our images which are ſet up in churches and carved have no divinity in them. In their private houſes they have

images for their houſehold ſaints, and for the moſt part they are put in the darkeſt place of the houſe: he that comes into his neighbour's houſe doth firſt ſalute his ſaints, although he ſee them not. If any form or ſtool ſtand in his way, he oftentimes beateth his brow upon the ſame, and often ducking down with his head and body, worſhippeth the chief image. The habit and attire of the prieſts and of the laymen doth nothing at all differ. As for marriage it is forbidden to no man, only this is received and held amongſt them for a rule and cuſtom, that if a prieſt's wife doth die, he may not marry again, nor take a ſecond wife; and therefore they of ſecular prieſts, as they call them, are made monks, to whom then chaſtity for ever is commanded. Their divine ſervice is all done and ſaid in their own language, that every man may underſtand it: they receive the Lord's ſupper with leavened bread, and after the conſecration they carry it about the church in a ſaucer, and prohibit no man from receiving and taking of it that is willing ſo to do. They uſe both the Old and the New Teſtament, and read both in their own language, but ſo confuſedly, that they themſelves that do read underſtand not what themſelves do ſay; and while any part of either Teſtament is read, there is liberty given by cuſtom to prattle, talk, and make a noiſe: but in the time of the reſt of the ſervice they uſe very great ſilence and reverence, and behave themſelves very modeſtly, and in good ſort. As touching the Lord's Prayer, the tenth man amongſt them knows it not; and for the articles of our faith, and the ten commandments, no man, or at the leaſt very few of them, do either know them or can ſay them; their opinion is, that ſuch ſecret and holy things as they are, ſhould not raſhly and imprudently be communicated with the common people. They hold for a maxim amongſt them, that the old law and the commandments alſo are aboliſhed by the death and blood of Chriſt: all ſtudies and letters of humanity they utterly refuſe: concerning the Latin, Greek, and Hebrew tongues, they are altogether ignorant in them.

Every year they celebrate four ſeveral faſts, which they call according to the names of the ſaints. The firſt begins with them at the time that our Lent begins; the ſecond is called amongſt them the faſt of St. Peter; the third is taken from the day of the Virgin Mary; and the fourth and laſt begins upon St. Philip's day. But as we begin our Lent upon Wedneſday, ſo they begin theirs upon the Sunday. Upon the Saturday they eat fleſh. Whenſoever any of thoſe faſting feaſts do draw near, look what week doth immediately go before them, the ſame week they live altogether upon white meats; and in their common language they call thoſe weeks the faſt of butter.

In the time of their faſts, the neighbours every where go from one to another, and viſit one another, and kiſs one another with kiſſes of peace, in token of their mutual love and chriſtian concord; and then alſo they do more often than at any other time go to the holy communion. When ſeven days are paſt from the beginning of the faſt, then they do often either go to their churches, or keep themſelves at home and uſe often prayer; and for that ſevennight they eat nothing but herbs: but after that ſevennight's faſt is once paſt, then they return to their old intemperance of drinking, for they are notable toſſpots. As for the keeping of their faſting days, they do it very ſtraightly; neither do they eat any thing beſides herbs and ſalt fiſh as long as thoſe faſting days do endure; but upon every Wedneſday and Friday in every week throughout the year they faſt.

There are very many monaſteries of the order of St. Benedict amongſt them, to which many great livings for their maintenance do belong; for the friars and the monks do at the leaſt poſſeſs the third part of the livings throughout the whole Moſcovite empire. To thoſe monks that are of this order there is amongſt them a perpetual prohibition

bition that they may eat no flesh, and therefore their meat is only salt fish, milk, and butter; neither is it permitted them by the laws and customs of their religion to eat any fresh fish at all; and at those four fasting times whereof we spake before, they eat no fish at all, only they live with herbs and cucumbers, which they do continually for that purpose cause and take order to grow and spring, for their use and diet.

As for their drink, it is very weak and small. For the discharge of their office, they do every day say service, and that early in the morning before day; and they do in such sort, and with such observation, begin their service, that they will be sure to make an end of it before day; and about nine of the clock in the morning they celebrate the communion. When they have so done they go to dinner, and after dinner they go again to service, and the like also after supper; and in the mean time while they are at dinner, there is some exposition or interpretation of the gospel used.

Whensoever any abbot of any monastery dieth, the emperor taketh all his household stuff, beasts, flocks of sheep, gold, silver, and all that he hath; or else he that is to succeed him in his place and dignity doth redeem all those things, and buyeth them of the emperor for money.

Their churches are built of timber, and the towers of their churches, for the most part, are covered with shingle boards. At the doors of their churches they usually build some entrance or porch, as we do; and in their churchyards they erect a certain house of wood, wherein they set up their bells, wherein sometimes they have but one, in some two, and in some also three.

There is one use and custom amongst them which is strange and rare, but yet it is very ridiculous, and that is this: when any man dieth amongst them, they take the dead body and put it in a coffin or chest, and in the hand of the corpse they put a little scrowl, and in the same there are these words written, that the same man died a Russe of Russes, having received the faith, and died in the same. This writing or letter, they say, they send to St. Peter, who receiving it (as they affirm) reads it, and by-and-bye admits him into heaven, and that his glory and place is higher and greater than the glory of the christians of the Latin church, reputing themselves to be followers of a more sincere faith and religion than they: they hold opinion that we are but half christians, and themselves only to be the true and perfect church. These are the foolish and childish dotages of such ignorant barbarians.

Of the Moscovites that are idolaters, dwelling near to Tartaria.

There is a certain part of Moscovy, bordering upon the countries of the Tartars, wherein those Moscovites that dwell are very great idolaters. They have one famous idol amongst them, which they call the golden old wife; and they have a custom that whensoever any plague or any calamity doth afflict the country, as hunger, war, or such like, then they go to consult with their idol, which they do after this manner: they fall down prostrate before the idol, and pray unto it, and put in the presence of the same a cymbal; and about the same certain persons stand, which are chosen amongst them by lot; upon their cymbal they place a silver toad, and sound the cymbal, and to whomsoever of those lotted persons that toad goeth, he is taken and by and by slain; and immediately, I know not by what illusions of the devil or idol, he is again restored to life, and then doth reveal and deliver the causes of the present calamity. And by this means knowing how to pacify the idol, they are delivered from the imminent danger.

Of

Of the form of their private houſes, and of the apparel of the people.

The common houſes of the country are every where built of beams of fir-tree; the lower beams do ſo receive the round hollowneſs of the uppermoſt, that by the means of the building thereupon, they reſiſt and expel all winds that blow; and where the timber is joined together, there they ſtop the chinks with moſs. The form and faſhion of their houſes in all places is four ſquare, with ſtrait and narrow windows, whereby with a tranſparent caſement, made or covered with ſkin like to parchment, they receive the light. The roofs of their houſes are made of boards covered without with the bark of trees; within their houſes they have benches or griezes hard by their walls, which commonly they ſleep on, for the common people know not the uſe of beds; they have ſtoves wherein in the morning they make a fire, and the ſame fire doth either moderately warm, or make very hot the whole houſe.

The apparel of the people for the moſt part is made of wool; their caps are picked like unto a tike or diamond, broad beneath and ſharp upward. In the manner of making whereof there is a ſign and repreſentation of nobility; for the loftier or higher their caps are, the greater is their birth ſuppoſed to be, and the greater reverence is given them by the common people.

The concluſion, to Queen Mary.

Theſe are the things, Moſt Excellent Queen, which your ſubjects newly returned from Ruſſia have brought home concerning the ſtate of that country; wherefore if Your Majeſty ſhall be favourable, and grant a continuance of the travel, there is no doubt but that the honour and renown of your name will be ſpread amongſt thoſe nations, whereunto three only noble perſonages from the very creation have had acceſs, to whom no man hath been comparable.

THE copy of the Duke of Moſcovy and Emperor of Ruſſia his letters ſent to king Edward the Sixth, by the hands of Richard Chancelour.

THE almighty power of God, and the incomprehenſible Holy Trinity, rightful Chriſtian belief, &c. We, Great Duke Juan Vaſilivich, by the grace of God, great lord and Emperor of all Ruſſia, great Duke of Volodomer, Moſco, and Novograd, King of Kazan, King of Aſtracan, Lord of Pleſko, and Great Duke of Smolenſko, of Twerria, Joughoria, Permia, Vadſka, Bulghoria, and others, Lord and Great Duke of Novograd in the Low Country, of Chernigo, Rezan, Polotſkoy, Roſtove, Yaruſlaveley, Bealozera, Liefland, Oudoria, Obdoria, and Condenza, Commander of all Siberia, and of the north parts, and Lord of many other countries, greeting. Before all, right, great, and worthy of honour, Edward, King of England, &c. according to our moſt hearty and good zeal, with good intent and friendly deſire, and according to our holy chriſtian faith, and great governance, and being in the light of great underſtanding, our anſwer by this our honourable writing unto your kingly governance, at the requeſt of your faithful ſervant Richard Chancelour, with his company, as they ſhall let you wiſely know, is this. In the ſtrength of the twentieth year of our governance, be it known, that at our ſea coaſts arrived a ſhip with one Richard and his company, and ſaid that he was deſirous to come into

into our dominions, and according to his requeſt hath ſeen our majeſty and our eyes; and hath declared unto us your majeſty's deſire, as that we ſhould grant unto your ſubjects to go and come, and in our dominions, and among our ſubjects, to frequent free marts with all ſorts of merchandiſes, and upon the ſame to have wares for their return; and they have alſo delivered us your letters, which declare the ſame requeſt. And hereupon we have given order, that whereſoever your faithful ſervant Hugh Willoughbie land or touch in our dominions, to be well entertained, who as yet is not arrived, as your ſervant Richard can declare.

And we, with chriſtian belief and faithfulneſs, and according to your honourable requeſt, and my honourable commandment, will not leave it undone; and are furthermore willing that you ſend unto us your ſhips and veſſels, when and as often as they may have paſſage, with good aſſurances on our part to ſee them harmleſs. And if you ſend one of your majeſty's counſel to treat with us, whereby your country merchants may, with all kinds of wares, and where they will, make their market in our dominions, they ſhall have their free mart, with all free liberties, through my whole dominions with all kind of wares, to come and go at their pleaſure, without any let, damage, or impediment, according to this our letter, our word, and our ſeal, which we have commanded to be underſealed. Written in our dominion, in our city, and our palace in the caſtle of Moſco, in the year 7060, the ſecond month of February.

This letter was written in the Moſcovian tongue, in letters much like to the Greek letters, very fair written in paper, with a broad ſeal hanging at the ſame, ſealed in paper upon wax. This ſeal was much like the broad ſeal of England, having on the one ſide the image of a man on horſeback, in complete harneſs, fighting with a dragon. Under this letter was another paper, written in the Dutch tongue, which was the interpretation of the other, written in the Moſcovian letters. Theſe letters were ſent the next year after the date of king Edward's letters, 1554.

The Coins, Weights, and Meaſures uſed in Ruſſia; written by John Haſſe, in the year 1554.

FORASMUCH as it is moſt neceſſary for all merchants who ſeek to have traffic in any ſtrange regions, firſt to acquaint themſelves with the coins of thoſe lands with which they do intend to join in traffic, and how they are called from the valuation of the higheſt piece to the loweſt, and in what ſort they make their payments, as alſo what their common weights and meaſures be; for theſe cauſes I have thought good to write ſomething thereof, according to mine own knowledge and experience, to the end that the merchants of that new adventure may the better underſtand how the wealth of that new frequented trade will ariſe.

Firſt, it is to be noted, that the emperor of Ruſſia hath no other coins than ſilver in all his land, which goeth for payment amongſt merchants; yet notwithſtanding there is a coin of copper which ſerveth for the relief of the poor in Moſco, and no where elſe, and that is but only for quaſſe, water, and fruit, as nuts, apples, and ſuch other like. The name of which money is called pole or poles, of which poles there go to the leaſt of the ſilver coins eighteen. But I will not ſtand upon this, becauſe it is no current money among merchants.

Of ſilver coins there be three ſorts of pieces: the leaſt is a poledenga; the ſecond a denga; the third, nowgrote, which is as much to ſay in Engliſh, as halfpenny, penny, and two-pence; and for other valued money than this, there is none: there are often-

times there coins of gold, but they come out of foreign countries, whereof there is no ordinary valuation, but they pass according to the agreement of merchants.

Their order in summing of money is this: as we say in England halfpenny, penny, shilling, and pound, so say they poledenga, denga, altine, and rubble: there goeth two poledengas to a denga, six dengas to an altine, and twenty-three altines, and two dengas to a rubble.

Concerning the weights of Russia they are these: there are two sorts of pounds in use amongst them; the one great, the other small: the great pound is just two small pounds: they call the great weight by the name of beasemar, and the small they call the skalla weight: with this small weight they weigh their silver coins, of the which the Emperor hath commanded to put to every small pound three rubbles of silver; and with the same weight they weigh all grocery wares, and almost all other wares which come into the land, except those which they weigh by the pode, as hops, salt, iron, lead, tin, and batrie with divers others, notwithstanding they use to weigh batrie more often by the small weight than by the great.

Whensoever you find the prices of your wares rated by the pode, consider that to be the great weight, and the pound to be the small. Also they divide the small pound into forty-eight parts, and they call the eight-and-fortieth part a slotnike, by the which slotnike, the retailers sell their wares out of their shops, as goldsmiths, grocers, silk-sellers, and such other like as we do use to retail by the ounce: and as for their great weight which they call the beasemar, they sell by pode, or shippond. The pode doth contain of the great weight, forty pounds, and of the small eighty: there go ten podes to a shippond.

Yet you *must* consider that their great weight is not full with ours: for I take not their great pound to be full thirteen ounces, but above twelve I think it be. But for your just proof, weigh six rubbles of Russia money with our pound weight, and then you shall see what it lacketh: for six rubbles of Russia is by the Emperor's standard, the great pound: so that I think it be the next way to know the just weight, as well of the great pound as of the small.

There is another weight needful to be known, which is the weight of Wardhouse, for so much as they weigh all their dry fish by weight, which weight is the beasemar, as they of Russia do use, notwithstanding there is another sort in it: the names of those weights are these: the mark pound, the great pound, the weie, and the shippond. The mark pound is to be understood as our pound, and their great pound is twenty-four of their mark pound: the weie is three great pound, and eight weie is a shippond.

Now concerning their measures, as they have two sorts of weights, so they have also two sorts of measures, wherewith they measure cloth both linen and woollen: they call the one an areshine, and the other a locut: the areshine I take to be as much as the Flanders ell, and their locut half an English yard: with their areshine they may mete all such sorts of cloths as come into the land, and with the locut all such cloth both linen and woollen, as they make themselves. And whereas we use to give yard and inch, or yard and handful, they do give nothing but bare measure.

They have also a measure wherewith they do mete their corn which they call a setforth, and the half of that an osmine: this setforth I take to be three bushels of London measure. And as for their drink measure, they call it a span, which is much like a bucket, and of that I never saw any true rate, but that some was greater than other some. And as for the measures of Wardhouse wherewith they mete their cloth,

there is no difference between that and the meaſure of Danſk, which is half an Engliſh ell.

Concerning the tolls and cuſtoms of Ruſſia, it was reported to me in Moſcovia, that the Turks and Armenians pay the tenth penny cuſtom of all the wares they bring into the Emperor's land, and above that they pay for all ſuch goods as they weigh at the Emperor's beam, two-pence of the rubble, which the buyer or ſeller muſt make report of to the maſter of the beam: they alſo pay a certain horſe toll, which is in divers places of his realm four pence of a horſe.

The Dutch nation are free of this: notwithſtanding for certain offences, they had loſt their privileges, which they have recovered this ſummer, to their great charge. It was reported to me by a juſtice of that country, that they paid for it thirty thouſand rubbles, and alſo that Rye, Dorpte, and Revel have yielded themſelves under the government of the Emperor of Ruſſia: whether this was a bragg of the Ruſſes or not, I know not, but thus he ſaid, and indeed while we were there, there came a great ambaſſador out of Liefland, for the aſſurance of their privileges.

To ſpeak ſomewhat of the commodities of this country, it is to be underſtood, that there is a certain place four ſcore miles from the ſea called Colmogro: to which place there reſort all the ſorts of wares that are in the north parts, as oils, ſalt, ſtockfiſh, ſalmon, feathers, and furs: their ſalt they make of ſalt water by the ſea ſide: their oils they make of ſeals, whereof they have great ſtore which is brought out of the bay where our ſhips came in: they make it in the ſpring of the year, and bring it to Colmogro to ſell, and the merchants there carry it to Novogrode, and ſo ſell it to the Dutch nation. Their ſtockfiſh and ſalmon cometh from a place called Mallums, not far from Wardhouſe: their ſalmon and their ſalt they carry to Moſco, and their dry fiſh they carry to Novogrode, and ſell it there to the Lieflanders.

The furs and feathers which come to Colmogro, as ſables, beavers, minks, armine, lettis, graies, woolverings, and white foxes, with deer ſkins, they are brought thither, by the men of Penning, Lampas, and Powſtezer, which fetch them from the Samoedes that are counted ſavage people: and the merchants that bring theſe furs do uſe to truck with the merchants of Colmogro for cloth, tin, batrie, and ſuch other like, and the merchants of Colmogro carry them to Novogrode, Vologda, or Moſco, and ſell them there. The feathers which come from Penning they do little eſteem.

If our merchants do deſire to know the meeteſt place of Ruſſia for the ſtanding houſe, in mine opinion I take it to be Vologda, which is a great town ſtanding in the heart of Ruſſia, with many great and good towns about it. There is great plenty of corn, victuals, and of all ſuch wares as are raiſed in Ruſland, but ſpecially, flax, hemp, tallow, and bacon: there is alſo great ſtore of wax, but it cometh from the Moſko.

The town of Vologda is meeteſt for our merchants, becauſe it lieth amongſt all the beſt towns of Ruſſia, and there is no town in Ruſſia but trades with it: alſo the water is a great commodity to it. If they plant themſelves in Moſco or Novogrode, their charge will be great and wonderful, but not ſo in Vologda: for all things will there be had better cheap by the one half And for their vent I know no place ſo meet. It is likely that ſome will think the Moſko to be the meeteſt by the reaſon of the court, but by that reaſon I take it to be worſe: for the charge there would be ſo great by cravers and expences, that the moiety of the profit would be wholly conſumed, which in the other place will be ſaved. And yet notwithſtanding our merchants may be there in the winter to ſerve the Emperor and his court. The Emperor is a great merchant himſelf

himſelf of wax and ſables, which with good foreſight may be procured to their hands: as for other commodities there are little or none in Moſcovia, beſides thoſe above rehearſed: if there be other it is brought thither by the Turks, who will be dainty to buy our clothes conſidering the charges of carriage over land.

Our merchants may do well to provide for the Ruſſes ſuch wares as the Dutch nation doth ſerve them of, as Flanders and Holland cloths, which I believe, they ſhall ſerve better and with leſs charge than they of Rye, or Dorpte, or Revel; for it is no ſmall adventure to bring their clothes out of Flanders to either of theſe places, and their charge not little to carry them overland to Novogrode, which is from Rye nine hundred Ruſſian miles.

This Novogrode is a place well furniſhed with flax, wax, hides, tallow, and many other things: the beſt flax in Ruſſia, is brought thither, and there ſold by the hundred bundles, which is done alſo at Vologda, and they that bring the flax to Novogrode, dwell as near Vologda, as Novogrode, and when they hear of the utterance which they may have with our nation, they will as willingly come to them as go to other.

They have in Ruſſia two ſorts of flax, the one is called great flax, and the other ſmall: that which they call great flax is better by four rubbles in one hundred bundles than the ſmall: it is much longer than the other, and cleaner without wood: and whereas of the ſmall flax there go twenty-ſeven or twenty-eight bundles to a ſhippond, there goeth not of the greater ſort above twenty-two or twenty-four at the moſt. There are many other trifles in Ruſſia, as ſoap, mats, &c. but I think there will be no great account made of them.

The Letter of M. George Killingworth the Company's firſt Agent in Moſcovy, touching their Entertainment in their ſecond Voyage. Anno 1555, the 27th of November in Moſco.

RIGHT Worſhipful, my duty conſidered, &c. It may pleaſe your Worſhip to underſtand, that at the making hereof we all be in good health, thanks be to God, ſave only William our cook as we came from Colmogro fell into the river out of the boat and was drowned. And the eleventh day of September we came to Vologda, and there we laid all our wares up, and ſold very little: but one merchant would have given us twelve robles for a broad cloth, and he ſaid he would have had them all, and four altines for a pound of ſugar, but we did refuſe it becauſe he was the firſt, and the merchants were not come thither, nor would not come before winter, truſting to have more: but I fear it will not be much better. Yet notwithſtanding we did for the beſt. And the houſe that our wares lie in coſts from that day until Eaſter ten robles. And the twenty-eight day of September we did determine with ourſelves that it was good for M. Gray, Arthur Edwards, Thomas Hautory, Chriſtopher Hudſon, John Segewick, Richard Johnſon, and Richard Judd, to tarry at Vologda, and M. Chancelor, Henry Lane, Edward Priſe, Robert Beſt, and I ſhould go to Moſco. And we did lade the Emperor's ſugar, with part of all ſorts of wares to have had to the Moſco with us, but the way was ſo deep, that we were fain to turn back, and leave it ſtill at Vologda till the froſt. And we went forth with poſt horſe, and the charge of every horſe being ſtill ten in number, comes to 10*s.* 7*d.* half-penny, beſides the guides. And we came to the Moſco the fourth day of October, and were lodged that night in a ſimple houſe: but the next day we were ſent for to the Emperor his ſecretary, and he bade us welcome with a cheerful countenance and cheerful words, and we ſhewed him that we had a letter from our Queen's Grace to the Emperor His Grace, and then he deſired to ſee them all, and that they might remain with him, to have them perfect, that the true meaning might be declared to the Emperor, and ſo we did: and then we were appointed to a better houſe: and the ſeventh day the ſecretary ſent for us again, and then he ſhewed us that we ſhould have a better houſe, for it was the Emperor his will, that we ſhould have all things that we did lack, and did ſend us meat of two ſorts, and two hens, our houſe free, and every two days to receive eight hens, ſeven altines, and two-pence in money, and meat a certain portion, and a poor fellow to make clean our houſe, and to do that whereunto we would ſet him. And we had given many rewards before, which you ſhall perceive by other, and ſo we gave the meſſengers a reward with thanks: and the ninth day we were ſent to make us ready to ſpeak with the Emperor on the morrow. And the letters were ſent us, that we might deliver them ourſelves, and we came before him the tenth day: and before we came to his preſence we went through a great chamber, where ſtood many ſmall tuns, pails, bowls, and pots of ſilver, I mean, like waſhing bowls, all parſel gilt: and within that another chamber, wherein ſat (I think) near a hundred in cloth of gold, and then into the chamber where His Grace ſat, and there I think were more than in the other chamber alſo in cloth of gold, and we did our duty, and ſhewed His Grace our Queen's Grace's letters, with a note of your preſent which was left in Vologda: and then His Grace did aſk how our Queen's Grace did, calling her couſin, ſaying that he was glad that we were come in health into his realm, and we went one by one unto him, and took him by the hand, and then His Grace,

Grace did bid us go in health, and come to dinner, again, and we dined in his preſence, and were ſet with our faces towards His Grace, and none in the chamber ſat with their backs towards him, being I think near a hundred at dinner then, and all ſerved with gold, as platters, chargers, pots, cups, and all not ſlender but very maſſy, and yet a great number of platters of gold, ſtanding ſtill on the cupboard not moved: and divers times in the dinner time His Grace ſent us meat and drink from his own table, and when we had dined we went up to His Grace, and received a cup with drink at his own hand, and the ſame night His Grace ſent certain gentlemen to us with divers ſorts of wine and meat, to whom we gave a reward, and afterward we were by divers Italians counſelled to take heed whom we did truſt to make the copy of the priviléges that we would deſire to have, for fear it ſhould not be written in the Ruſſian tongue, as we did mean. So firſt a Ruſſian did write for us a breviat to the Emperor, the tenor whereof was, that we did deſire a ſtronger privilege: and when the ſecretary ſaw it, he did deliver it to His Grace, and when we came again, His Grace willed us to write our minds, and he would ſee it, and ſo we did. And His Grace is ſo troubled with preparations to wars, that as yet we have had no anſwer: but we have been required of his ſecretary, and of the under chancellor, to know what wares we had brought into the realm, and what wares we do intend to have, that are, or may be had in this realm: and we ſhewed them, and they ſhewed the Emperor thereof. And then they ſaid His Grace's pleaſure was, that his beſt merchants of the Moſco ſhould be ſpoken to, to meet and talk with us. And ſo a day was appointed, and we met in the ſecretary his office, and there was the under chancellor, who was not paſt two years ſince the Emperor's merchant, and not his chancellor: and then the concluſion of our talk was, that the chancellor willed us to bethink us, where we would deſire to have a houſe or houſes, that we might come to them as to our own houſe, and for merchandiſe to be made preparation for us, and they would know our prices of our wares and friſe: and we anſwered that for our prices they muſt ſee the wares before we could make any price thereof, for the like in goodneſs hath not been brought into the realm, and we did look for an example of all ſorts of our wares to come from Vologda, with the firſt ſled way, and then they ſhould ſee them, and then we would ſhew them the prices of them: and likewiſe we could not tell them what we would give them juſtly, till we did know as well their juſt weights as their meaſures: for in all places where we did come, all weights and meaſures did vary. Then the ſecretary (who had made promiſe unto us before) ſaid, that we ſhould have all the juſt meaſures under ſeal, and he that was found faulty in the contrary, to buy or ſell with any other meaſure than that, the law was, that he ſhould be puniſhed: he ſaid moreover, that if it ſo happen that any of our merchants do promiſe by covenant at any time to deliver you any certain ſum of wares in ſuch a place, and of ſuch like goodneſs, at ſuch a day, for ſuch a certain price, that then becauſe of variance, we ſhould cauſe it to be written, according as the bargain is, before a juſtice or the next ruler to the place: if he did not keep covenant and promiſe in all points, according to his covenant, that then look what loſs or hindrance we could juſtly prove that we have thereby, he ſhould make it good if he be worth ſo much: and in like caſe we muſt do to them: and to that we did agree, ſave only if it were to come over the ſea, then if any ſuch fortune ſhould be (as God forbid) that the ſhip ſhould miſchance or be robbed, and the proof to be made that ſuch kind of wares were laden, the Engliſh merchants to bear no loſs to the other merchant. Then the chancellor ſaid, methinks you ſhall do beſt to have your houſe at Colmogro, which is but one hundred miles from the right diſcharge of the ſhips, and yet I truſt the ſhips ſhall come

nearer

nearer hereafter, becauſe the ſhips may not tarry long for their lading, which is one thouſand miles from Vologda by water, and all our merchants ſhall bring all our merchandiſe to Colmogro to you, and ſo ſhall our merchants neither go empty nor come empty: for if they lack lading homeward, there is ſalt, which is good ware here, that they may come loaden again. So we were very glad to hear that, and did agree to his ſaying: for we ſhall nevertheleſs, if we liſt, have a houſe at Vologda, and at the Moſco, yea, and at Novogrode, or where we will in Ruſland: but the three-and-twentieth of this preſent we were with the ſecretary, and then among other talk, we moved, that if we ſhould tarry at Colmogro with our wares, and ſhould not come to Vologda, or further to ſeek our market, but tarry ſtill at Colmogro, and then the merchants of the Moſco and others ſhould not come and bring their wares, and ſo the ſhips ſhould come, and not have their lading ready, that then it were a great loſs and hindrance for us: then ſaid he again to us, that the merchants had been again together with him, and had put the like doubt, that if they ſhould come and bring their wares to Colmogro, and that they ſhould not find wares there ſufficient to ſerve them, that then they ſhould be at great loſs and hindrance, they leaving their other trades to fall to that: and to that we did anſwer, that after the time that we do appoint with them to bring their wares to Colmogro, God willing, they ſhould never come thither, but at the beginning of the year, they ſhould find that our merchants would have at the leaſt for a thouſand robles, although the ſhips were not come: ſo that he ſaid, that then we muſt talk further with the merchants: ſo that as yet I know not, but that we ſhall have need of one houſe at Colmogro, and another at Vologda, and if that they bring not their wares to Colmogro, then we ſhall be ſure to buy ſome at Vologda, and to be out of bondage.

And thus may we continue three or four years, and in this ſpace we ſhall know the country and the merchants, and which way to ſave ourſelves beſt, and where to plant our houſes, and where to ſeek for wares: for the Moſco is not beſt for any kind of wares for us to buy, ſave only wax, which we cannot have under ſeven-pence the Ruſſe pound, and it lacks two ounces of our pound, neither will it be much better cheap, for I have bidden ſix-pence for a pound. And I have bought more, five hundred weight of yarn, which ſtands me in eight-pence farthing the Ruſſe pound one with another. And if we had received any ſtore of money, and were diſpatched here, of that we tarry for, as I doubt not but we ſhall be ſhortly (you know what I mean), then as ſoon as we have made ſale, I do intend to go to Novogrode, and to Pleſco, whence all the great number of the beſt tow flax cometh, and ſuch wares as are there I truſt to buy part. And fear you not but we will do that may be done, if God ſends us health, deſiring you to prepare fully for one ſhip to be ready in the beginning of April to depart off the coaſt of England.

Concerning all thoſe things which we have done in the wares, you ſhall receive a perfect note by the next bearer (God willing) for he that carrieth theſe from us is a merchant of Terwill, and he was cauſed to carry theſe by the commandment of the Emperor his ſecretary, whoſe name is Juan Mecallawich Weſkawate, whom we take to be our very friend. And if it pleaſe you to ſend any letters to Dantiſke to Robert Elſon, or to William Watſon's ſervant Dunſtan Walton to be conveyed to us, it may pleaſe you to encloſe ours in a letter ſent from you to him, written in Poliſh, Dutch, Latin, or Italian: ſo encloſed coming to the Moſco to his hands, he will convey our letters to us whereſoever we be. And I have written to Dantiſke already to them for the conveyance of letters from thence.

And

And to certify you of the weather here, men ſay that theſe hundred years was never ſo warm weather in this country at this time of the year. But as yeſternight we received a letter from Chriſtopher Hudſon from a city called Yeraſlave, who is coming hither with certain of our wares, but the winter did deceive him, ſo that he was fain to tarry by the way: and he wrote that the Emperor's preſent was delivered to a gentleman at Vologda, and the ſled did overthrow, and the butt of hollock was loſt, which made us all very ſorry.

I pray you be not offended with theſe my rude letters for lack of time: but as ſoon as ſales be made, I will find the means to convey you a letter with ſpeed: for the way is made ſo doubtful, that the right meſſenger is ſo much in doubt, that he would not have any letters of any effect ſent by any man, if he might, for he knows not of theſe: and to ſay the truth, the way is not for him to travel in. But I will make another ſhift beſide, which I truſt ſhall ſervè the turn till he come, if ſales be made before he be ready, which is and ſhall be as pleaſeth God: who ever preſerve your Worſhip, and ſend us good ſales. Written in haſte.

By your's to command
George Killingworth, Draper.

A Copy of the firſt Privileges granted by the Emperor of Ruſſia to the Engliſh Merchants in the Year 1555.

John Vaſilivich by the grace of God Emperor of Ruſſia, Great Duke of Novogrode, Moſcovia, &c. To all people that ſhall ſee, read, hear, or underſtand theſe preſents, greeting. Foraſmuch as God hath planted all realms and dominions in the whole world with ſundry commodities, ſo as the one hath need of the amity and commodities of the other, and by means thereof traffic is uſed from one to another, and amity thereby increaſed: and for that as amongſt men nothing is more to be deſired than amity, without the which no creature being of a natural good diſpoſition can live in quietneſs, ſo that it is as troubleſome to be utterly wanting, as it is perceived to be grievous to the body to lack air, fire, or any other neceſſaries moſt requiſite for the conſervation and maintenance thereof in health: conſidering alſo how needful merchandiſe is, which furniſheth men of all that which is convenient for their living and nouriture, for their clothing, trimming, the ſatisfying of their delights, and all other things convenient and profitable for them, and that merchandiſe bringeth the ſame commodities from divers quarters in ſo great abundance, as by means thereof nothing is lacking in any part, and that all things be in every place (where intercourſe of merchandiſes is received and embraced) generally in ſuch ſort, as amity thereby is entered into, and planted to continue, and the enjoyers thereof be as men living in a golden world: Upon theſe reſpects and other weighty and good conſiderations, us hereunto moving, and chiefly upon the contemplation of the gracious letters, directed from the Right High, Right Excellent, and Right Mighty Queen Mary, by the grace of God Queen of England, France, &c. in the favour of her ſubjects, merchants, the governor, conſuls, aſſiſtants, and commonalty of merchants adventurers for diſcovery of lands, &c.

Know ye therefore, that we of our grace ſpecial, mere motion, and certain knowledge, have given and granted, and by theſe preſents for us, our heirs and ſucceſſors, do give and grant as much in us is and lieth, unto Sebaſtian Cabota governor, ſir George Barnes knight, &c. conſuls: Sir John Greſham, &c. aſſiſtants, and to the commonalty of the afore-named fellowſhip, and to their ſucceſſors for ever, and

to the ſucceſſors of every of them, theſe articles, grants, immunities, franchiſes, liberties and privileges, and every of them hereafter following expreſſed and declared, videlicet:

1. We for us, our heirs, and ſucceſſors, do by theſe preſents give and grant free licence, faculty, authority and power unto the ſaid governor, conſuls, aſſiſtants and commonalty of the ſaid fellowſhip, and to their ſucceſſors for ever, that all and ſingular the merchants of the ſame company, their agents, factors, doers of their buſineſs, attornies, ſervants, and miniſters, and every of them, may at all times hereafter for evermore, ſurely, freely, and ſafely, with their ſhips, merchandiſes, goods, and things whatſoever, ſail, come and enter into all and ſingular our lands, countries, dominions, cities, towns, villages, caſtles, ports, juriſdictions, and diſtricts by ſea, land, or freſh waters, and there tarry, abide, or ſojourn, and buy, ſell, barter and change all kind of merchandiſes, with all manner of merchants, and people, of whatſoever nation, rite, condition, ſtate or degrees they be, and with the ſame or other ſhips, wares, merchandiſes, goods, and things whatſoever they be, unto other empires, kingdoms, dukedoms, parts, and to any other place or places at their pleaſure and liberty by ſea, land, or freſh waters may depart, and exerciſe all kind of merchandiſes in our empire and dominions, and every part thereof freely and quietly, without any reſtraint, impeachment, price, exaction, preſt, ſtrait, cuſtom, toll, impoſition, or ſubſidy to be demanded, taxed, paid, or at any time hereafter to be demanded, taxed, ſet, levied, or inferred upon them, or any of them, or upon their goods, ſhips, wares, merchandiſes, and things, of, for, or upon any part or parcel thereof, or upon the goods, ſhips, wares, merchandiſes, and things of any of them, ſo that they ſhall not need any other ſafe conduct or licence-general nor ſpecial of us, our heirs, or ſucceſſors; neither ſhall be bound to aſk any ſafe conduct or licence in any of the aforeſaid places ſubject unto us.

2. Item, we give and grant to the ſaid merchants this power and liberty, that they, nor any of them, nor their goods, wares, merchandiſes, or things, nor any part thereof, ſhall be by any means within our dominions, lands, countries, caſtles, towns, villages, or other place or places of our juriſdiction, at any time hereafter attached, ſtayed, arreſted, nor diſturbed for any debt, duty, or other thing, for the which they be not principal debtors or ſureties, nor alſo for any offence or treſpaſs committed, or that ſhall be committed, but only for ſuch as they, or any of them, ſhall actually commit; and the ſame offences (if any ſuch happen) ſhall be by us only heard and determined.

3. Item, we give and grant that the ſaid merchants ſhall and may have free liberty, power, and authority to name, chooſe, and aſſign brokers, ſhippers, packers, weighers, meaſurers, waggoners, and all other meet and neceſſary labourers, for to ſerve them in their feat of merchandiſes, and miniſter and give unto them, and every of them, a corporal oath, to ſerve them well and truly in their offices, and finding them, or any of them, doing contrary to his or their oath, may puniſh and diſmiſs them, and from time to time chooſe, ſwear, and admit other in their place or places, without contradiction, let, vexation, or diſturbance, either of us, our heirs, or ſucceſſors, or of any other our juſtices, officers, miniſters, or ſubjects whatſoever.

4. Item, we give and grant unto the ſaid merchants, and their ſucceſſors, that ſuch perſon as is or ſhall be commended unto us, our heirs, or ſucceſſors, by the governor, conſuls, and aſſiſtants of the ſaid fellowſhip reſiant within the city of London, within the realm of England, to be their chief factor within this our empire and dominions, may and ſhall have full power and authority to govern and rule all Engliſhmen that have had, or ſhall have acceſs, or repair in or to this ſaid empire and juriſdictions, or any part

thereof; and ſhall and may miniſter unto them, and every of them, good juſtice in all their cauſes, plaints, quarrels, and diſorders between them, moved and to be moved, and aſſemble, deliberate, conſult, conclude, define, determine, and make ſuch acts and ordinances as he ſo commended with his aſſiſtants ſhall think good and meet for the good order, government, and rule of the ſaid merchants, and all other Engliſhmen repairing to this our ſaid empire and dominions, or any part thereof, and to ſet and levy upon all and every Engliſhman, offender or offenders, of ſuch their acts and ordinances made and to be made, penalties and mulcts by fine or impriſonment.

5. Item, if it happen that any of the ſaid merchants, or other Engliſhman, as one or more do rebel againſt ſuch chief factor or factors, or his or their deputies, and will not diſpoſe him or themſelves to obey them, and every of them, as ſhall appertain; if the ſaid rebels or diſobedients do come, and be found in our ſaid empire and juriſdictions, or any part and place thereof, then we promiſe and grant that all and every our officers, miniſters, and ſubjects ſhall effectually aid and aſſiſt the ſaid chief factor or factors, and their deputies, and for their power ſhall really work to bring ſuch rebel, or diſobedient rebels, or diſobedients, to due obedience; and to that intent ſhall lend unto the ſame factor or factors, and their deputies, upon requeſt therefore to be made, priſons and inſtruments for puniſhments from time to time.

6. Item, we promiſe unto the ſaid merchants, and their ſucceſſors, upon their requeſt, to exhibit and do unto them good, exact, and favourable juſtice, with expedition in all their cauſes; and that when they, or any of them, ſhall have acceſs, or come to or before any of our juſtices, for any their plaints moved, and to be moved, between any our ſubjects or other ſtranger, and them, or any of them, that then they ſhall be firſt and forthwith heard, as ſoon as the party which they ſhall find before our juſtices ſhall be depeached, which party being heard forthwith, and as ſoon as may be, the ſaid Engliſh merchants ſhall be rid and diſpatched; and if any action ſhall be moved by or againſt any of the ſaid merchants, being abſent out of our ſaid empire and dominions, then ſuch merchants may ſubſtitute an attorney in all and ſingular his cauſes, to be followed as need ſhall require, and as ſhall ſeem to him expedient.

7. Item, we grant and promiſe to the ſaid merchants, and to their ſucceſſors, that if the ſame merchants, or any of them, ſhall be wounded, or (which God forbid) ſlain in any part or place of our empire or dominions, then good information thereof given, we and our juſtices and other officers ſhall execute due correction and puniſhment without delay, according to the exigence of the caſe; ſo that it ſhall be an example to all others not to commit the like. And if it ſhall chance the factors, ſervants, or miniſters, of the ſaid merchants, or any of them, to treſpaſs or offend, whereby they, or any of them, ſhall incur the danger of death or puniſhment, the goods, wares, merchandiſes, and things of their maſters ſhall not therefore be forfeited, confiſcated, ſpoiled, nor ſeized by any means by us, our heirs, or ſucceſſors, or by any our officers, miniſters, or ſubjects, but ſhall remain to their uſe, frank, free, and diſcharged from all puniſhment and loſs.

8. Item, we grant that if any of the Engliſh nation be arreſted for any debt, he ſhall not be laid in priſon, ſo far as he can put in ſufficient ſurety and pawn; neither ſhall any ſergeant or officer lead them, or any of them, to priſon, before he ſhall have known whether the chief factor or factors, or their deputies, ſhall be ſureties, or bring in pawn for ſuch arreſted; then the officers ſhall releaſe the party, and ſhall ſet him or them at liberty.

9. Moreover, we give, grant, and promiſe to the ſaid merchants, that if any of their ſhips or other veſſels ſhall be ſpoiled, robbed, or damnified in ſailing, anchoring, or returning to or from our ſaid empires and dominions, or any part thereof, by any pirates, merchants, or other perſon, whatſoever he or they be, that then, and in ſuch caſe, we will do all that in us is to cauſe reſtitution, reparation, and ſatisfaction to be duly made to the ſaid Engliſh merchants, by our letters and otherwiſe, as ſhall ſtand with our honour, and be conſonant to equity and juſtice.

10. Item, for us, our heirs, and ſucceſſors, we do promiſe and grant to perform, maintain, corroborate, authenticate, and obſerve all and ſingular the aforeſaid liberties, franchiſes, and privileges, like as preſently we firmly do intend, and will corroborate, authenticate, and perform the ſame, by all mean and way that we can, as much as may be, to the commodity and profit of the ſaid Engliſh merchants, and their ſucceſſors, for ever.

And to the intent that all and ſingular the ſaid gifts, grants, and promiſes may be inviolably obſerved and performed, we, the ſaid John Vaſilivich, by the grace of God, Emperor of Ruſſia, Great Duke of Novogrode, Moſco, &c. for us, our heirs, and ſucceſſors, by our imperial and lordly word, inſtead of an oath, have and do promiſe, by theſe preſents, inviolably to maintain and obſerve, and cauſe to be inviolably obſerved and maintained, all and ſingular the aforeſaid gifts, grants, and promiſes from time to time, and at all and every time and times hereafter; and for the more corroboration hereof have cauſed our ſignet hereunto to be put*. Dated in our caſtle of Moſco, the twentieth day of , in the year

* The charter granted by Philip and Mary to the Ruſſia merchants does not deſerve inſertion; but it is ſingular that the right of conqueſt is permitted over any part poſſeſſed by infidels.

The Navigation and Diſcovery toward the River of Ob, made by Maſter Steven Burrough, Maſter of the Pinnace called the Serchthrift, with divers things worth the noting, paſſed in the Year 1556.

(Hakluyt, Vol. I. p. 274.)

WE departed from Ratcliffe to Blackwall the twenty-third of April. Saturday, being St. Mark's day, we departed from Blackwall to Grays.

The twenty-ſeventh, being Monday, the Right Worſhipful Sebaſtian Cabota came aboard our pinnace at Graveſend, accompanied with divers gentlemen and gentlewomen, who after that they had viewed our pinnace, and taſted of ſuch cheer as we could make them aboard, they went on ſhore, giving to our mariners right liberal rewards; and the good old gentleman, Maſter Cabota, gave to the poor moſt liberal alms, wiſhing them to pray for the good fortune and proſperous ſucceſs of the Serchthrift, our pinnace; and then, at the ſign of the Chriſtopher, he and his friends banquetted, and made me, and them that were in the company, great cheer; and for very joy that he had to ſee the towardneſs of our intended diſcovery, he entered into the dance himſelf, among the reſt of the young and luſty company; which being ended, he and his friends departed moſt gently, commending us to the governance of Almighty God.

Tueſday we rode ſtill at Graveſend, making proviſion for ſuch things as we wanted.

Wedneſday, in the morning, we departed from Graveſend, the wind being at S. W.; that night we came to an anchor thwart our Lady of Holland's.

Thurſday, at three of the clock in the morning, we weighed, and by eight of the clock we were at an anchor in Orwel Wanns, and then incontinent I went aboard the Edward Bonaventure, where the worſhipful company of merchants appointed me to be, until the ſaid good ſhip arrived at Wardhouſe; then I returned again into the pinnace.

Friday, the fifteenth of May, we were within ſeven leagues of the ſhore, on the coaſt of Norway, the latitude at a ſouth ſun, 58° 30′, where we ſaw three ſails, beſide our own company; and thus we followed the ſhore or land, which lieth N. N. W., N. and by W., and N. W. and by N., as it doth appear by the plat.

Saturday at an eaſt ſun we came to St. Dunſtan's iſland, which iſland I ſo named; it was off us eaſt two leagues and a half, the wind being at S. E.; the latitude this day at a ſouth ſun 59° 42′. Alſo the high round mountain bare eaſt of us, at a ſouth ſun; and when this hill is eaſt of you, and being bound to the northward, the land lieth north and half a point weſterly, from this ſaid ſouth ſun, unto a north ſun, twenty leagues N. W. along the ſhore.

Upon Sunday, at ſix of the clock in the morning, the fartheſt land that we could ſee that lay N. N. W. was eaſt of us three leagues, and then it trended to the northwards, and to the eaſtwards of the north; which headland I judged to be Scoutſneſs. At ſeven of the clock we changed our courſe and went N. the wind being at S. S. E., and it waxed very thick and miſty, and when it cleared we went N. N. E. At a ſouth ſun we loſt ſight of the Serchthrift, becauſe of the miſt, making our way N.; and when we loſt ſight of the ſhore and pinnace, we were within two leagues and a half of the ſhore. The laſt land that we ſaw when this miſt came upon us, which is to the northwards of Scoutſneſs, lay N. N. E. and S. S. W., and we made our way N. until a weſt ſun five leagues.

From that until Monday, three a-clock in the morning, ten leagues N. N. E.; and then we went N. and by E., becauſe the wind came at the W. S. W. with thick miſt;

miſt; the latitude this day at a ſouth ſun 63° 30′ truly taken: at this ſeaſon we had ſight of our pinnace again.

From that until Tueſday a ſouth ſun N. N. E. 44 leagues, and then N. E.; from a ſouth ſun until eight of the clock, fifteen leagues N. E.

From that until Wedneſday a ſouth ſun N. N. E., except the firſt watch N. E.; then had we the latitude in 67° 39′. From that unto a N. W. ſun eighteen leagues N. E.; and then we were within two leagues of the ſhore, and ſaw the high land to the ſouthwards of Lowfoot break out through the miſt, and then we went N. and by E.

From the ſaid N. W. ſun until four of the clock in the morning, N. and by E. ten leagues and a half, and then N. N. E. until a ſouth ſun, the latitude being 69° 30′. From that until half an hour paſt ſeven of the clock, N. N. E. eleven leagues and a half, and then we went N. E. ten leagues. From that three leagues and a half E. N. E. and then we ſaw the land through the clouds and hazy thwart on the broadſide of us, the wind being then at S. S. W.

From that until Saturday, at eight of the clock in the morning, E. N. E., and to the northwards forty-eight leagues, and then the wind came up at N., we being aboard the ſhore, and thwart of the chapel which I ſuppoſe is called Kedilwike; then we caſt the ſhip's head to the ſeawards, becauſe the wind was very ſcant; and then I cauſed the pinnace to bear in with the ſhore, to ſee whether ſhe might find an harbour for the ſhips or not, and that ſhe found and ſaw two roaders ride in the ſound; and alſo they ſaw houſes. But notwithſtanding, God be praiſed, the wind enlarged upon us, that we had not occaſion to go into the harbour; and then the pinnace bare her mizen maſt overboard with flag and all, and loſt the flag: with the maſt there fell two men overboard, but God be praiſed they were ſaved; the flag was a token whereby we might underſtand whether there were a good harbour there or not.

At a north ſun the North Cape (which I ſo named the firſt voyage) was thwart of us, which is nine leagues to the eaſtwards of the foreſaid chapel from the eaſternmoſt point of it.

June 7. The Sunday we weighed in Corpus Chriſti bay, at a N. E. and by E. ſun: the bay is almoſt half a league deep; the headland, which is Corpus Chriſti point, lieth S. E. and by E. one league from the head of the bay, where we had a great tide, like a race over the flood: the bay is at the leaſt two leagues over; ſo do I imagine from the Fair foreland to Corpus Chriſti point ten leagues S. E. and by E.; it floweth in this bay at a S. and by W. moon, full ſea. From that we went until ſeven o'clock at afternoon twenty leagues S. E. and by S.; and then we took in all our ſails, becauſe it was then very miſty, and alſo we met with much ice that ran out of the bay; and then we went S. S. E. with our foreſail. At eight of the clock we heard a piece of ordnance, which was out of the Edward, which bade us farewell, and then we ſhot off another piece, and bade her farewell; we could not one ſee the other becauſe of the thick miſt: at a N. W. ſun it began ſomewhat to clear, and then we ſaw a headland, and the ſhore trended to the ſouthweſtward, which I judged to be about Croſs Iſland; it was off us at a N. N. W. ſun, W. S. W.

8. From this N. N. W. ſun until Monday we went S. E., and this morning we came at anchor among the ſhoals that lie off Point Lookout, at a N. E. and by E. ſun, the wind being at E. S. E. At this point Lookout a ſouth moon maketh a full ſea. Cape Good Fortune lieth from the Iſle of Croſſes S. E. and between them is ten leagues. Point Lookout lieth from Cape Good Fortune E. S. E., and between them are ſix leagues. St. Edmond's point lieth from point Lookout E. S. E., and half a point to

the ſouthwards, and between them are ſix leagues. There is between theſe two points a bay that is half a league deep, and is full of ſhoals and dangers. At a S. E. ſun we weighed, and turned to the windwards, the wind being at E. S. E.; and at a S. E. ſun we came to an anchor, being then a full ſea, in five fathoms and a half water. It lieth at this place where we rode, and alſo at point Lookout, four fathom water. At a W. N. W. ſun we weighed, and drived to the windwards until Tueſday, a N. N. E. ſun, and then being a high water, we came to an anchor open of the river Cola, in eight fathom water. Cape St. Bernard lieth from St. Edmond's point S. E. and by S., and betwixt them are ſix leagues; and alſo betwixt them is the river Cola, into which river we went this evening.

10. Wedneſday we rode ſtill in the ſaid river, the wind being at the N.; we ſent our ſkiff a-land to be dreſſed; the latitude of the mouth of the river Cola is 65° 48′.

11. Thurſday, at ſix of the clock in the morning, there came aboard of us one of the Ruſſe lodias, rowing with twenty oars, and there were four-and-twenty men in her. The maſter of the boat preſented me with a great loaf of bread, and ſix rings of bread, which they call colaches, and four dried pikes, and a peck of fine oatmeal; and I gave unto the maſter of the boat a comb and a ſmall glaſs: and he declared unto me that he was bound to Pechora; and after that I made them to drink, the tide being ſomewhat broken, they gently departed. The maſter's name was Pheodor.

Whereas the tenth day I ſent our pinnace on ſhore to be mended, becauſe ſhe was leaky and weak, with the carpenter and three men more to help him, the weather chanced ſo, that it was Sunday before they could get aboard our ſhip. All that time they were without proviſion of victuals, but only a little bread, which they ſpent by Thurſday at night, thinking to have come aboard when they had liſted, but wind and weather denied them; inſomuch that they were fain to eat graſs and ſuch weeds as they could find then above ground, but freſh water they had plenty; but the meat with ſome of them could ſcant frame, by reaſon of their queazy ſtomachs.

14. From Thurſday at afternoon, until Sunday in the morning, our bark did ride ſuch a roadſted, that it was to be marvelled, without the help of God, how ſhe was able to abide it.

In the bight of the S. E. ſhore of the river Cola, there is a good road in five fathom, or four fathom and a half, at a low water; but you ſhall have no land N. N. E. of you then. I proved with our pinnace that the depth goeth on the S. E. ſhore.

18. Thurſday we weighed our anchors in the river Cola, and went into the ſea ſeven or eight leagues, where we met with the wind far northerly, that of force it conſtrained us to go again back into the ſaid river, where came aboard of us ſundry of their boats, which declared unto me that they were alſo bound to the northwards, a fiſhing for morſe and ſalmon, and gave me liberally of their white and wheaten bread.

As we rode in this river, we ſaw daily coming down the river many of their lodias, and they that had leaſt had four-and-twenty men in them, and at the laſt they grew to thirty ſail of them; and among the reſt there was one of them whoſe name was Gabriel, who ſhewed me very much friendſhip, and he declared unto me that all they were bound to Pechora, a fiſhing for ſalmons and morſes; inſomuch that he ſhewed me by demonſtrations, that with a fair wind we had ſeven or eight days ſailing to the river Pechora, ſo that I was glad of their company. This Gabriel promiſed to give me warning of ſhoals, as he did indeed.

21. Sunday being the one-and-twentieth day, Gabriel gave me a barrel of mead, and one of his ſpecial friends gave me a barrel of beer, which was carried upon men's backs at leaſt two miles.

22. Monday

22. Monday we departed from the river Cola, with all the reſt of the ſaid lodias, but ſailing before the wind they were all too good for us; but according to promiſe, this Gabriel and his friend did often ſtrike their ſails and tarried for us, forſaking their own company.

23. Tueſday, at an E. N. E. ſun, we were thwart of Cape St. John. It is to be underſtood that from the Cape St. John unto the river or bay that goeth to Mezen, it is all ſunk land, and full of ſhoals and dangers, you ſhall have ſcant two fathom water, and ſee no land. And this preſent day we came to an anchor thwart of a creek, which is four or five leagues to the northwards of the ſaid cape, into which creek Gabriel and his fellow rowed, but we could not get in; and before night there were above twenty ſail that went into the ſaid creek, the wind being at the N. E. We had indifferent good landfang.

This afternoon Gabriel came aboard with his ſkiff, and then I rewarded him for the good company that he kept with us over the ſhoals with two ſmall ivory combs, and a ſteel glaſs, with two or three trifles more, for which he was not ungrateful; but notwithſtanding his firſt company had gotten further to the northwards.

24. Wedneſday being Midſummer-day, we ſent our ſkiff aland to ſound the creek, where they found it almoſt dry at a low water; and all the lodias within were on ground.

Although the harbour were evil, yet the ſtormy ſimilitude of northerly winds tempted us to ſet our ſails, and we let ſlip a cable and an anchor, and bare with the harbour, for it was then near a high water: and as always in ſuch journies varieties do chance, when we came upon the bar in the entrance of the creek, the wind did ſhrink ſo ſuddenly upon us, that we were not able to lead it in, and before we could have flatted the ſhip before the wind, we ſhould have been on ground on the lee ſhore; ſo that we were conſtrained to let fall an anchor under our ſails, and rode in a very breach, thinking to have warped in. Gabriel came out with his ſkiff, and ſo did ſundry others alſo, ſhewing their good will to help us, but all to no purpoſe, for they were likely to have been drowned for their labour; inſomuch that I deſired Gabriel to lend me his anchor, becauſe our own anchors were too big for our ſkiff to lay out, who ſent me his own, and borrowed another alſo and ſent it us. Then we laid out one of thoſe anchors, with a hawſer which he had of 140 fathom long, thinking to have warped in, but it would not be; for as we ſhorted upon the ſaid warp the anchor came home, ſo that we were fain to bear the end of the warp, that we ruſhed in upon the other ſmall anchor that Gabriel ſent aboard, and laid that anchor to ſeawards; and then between theſe two anchors we traverſed the ſhip's head to ſeawards, and ſet our foreſail and mainſail, and when the bark had way we cut the hawſer, and ſo gat the ſea to our friend, and tried out all that day with our main courſe.

25. The Thurſday we went room with Cape St. John, where we found indifferent good road for a N. N. E. wind, and for a need, for a N. and by W. wind.

26. Friday at afternoon we weighed and departed from thence, the weather being meetly fair, and the wind at E. S. E. and plied for the place where we left our cable and anchor and our hawſer; and as ſoon as we were at an anchor, the foreſaid Gabriel came aboard of us, with three or four more of their ſmall boats, and brought with them of their aquavitæ and mead, profeſſing unto me very much friendſhip, and rejoiced to ſee us again, declaring that they earneſtly thought that we had been loſt. This Gabriel declared unto me that they had ſaved both the anchors and our hawſer; and after we had thus communed, I cauſed four or five of them to go into my cabin, where I gave

them figs, and made them ſuch cheer as I could. While I was thus banquetting of them there came another of their ſkiffs aboard with one who was a Keril, whoſe name afterwards I learned, and that he dwelt in Colmogro, and Gabriel dwelt in the town of Cola, which is not far from the river's mouth. This foreſaid Keril ſaid unto me that one of the anchors which I borrowed was his; I gave him thanks for the loan of it, thinking it had been ſufficient. And as I continued in one accuſtomed manner, that if the preſent which they brought were worth entertainment, they had it accordingly; he brought nothing with him, and therefore I regarded him but little. And thus we ended, and they took their leave and went aſhore. At their coming aſhore Gabriel and Keril were at inconvenient words, and by the ears as I underſtand; the cauſe was becauſe the one had better entertainment than the other: but you ſhall underſtand that Gabriel was not able to make his party good, becauſe there were ſeventeen lodias of the Keril's company who took his part, and but two of Gabriel's company.

The next high water Gabriel and his company departed from thence, and rowed to their former company and neighbours, which were in number twenty-eight at the leaſt, and all of them belonging to the river Cola.

27. And as I underſtood Keril made reckoning that the hawſer which was faſt in his anchor ſhould have been his own; and at firſt would not deliver it to our boat, inſomuch that I ſent him word that I would complain upon him, whereupon he delivered the hawſer to my company.

The next day being Saturday, I ſent our boat on ſhore to fetch freſh water and wood, and at their coming on ſhore this Keril welcomed our men moſt gently, and alſo banquetted them; and in the mean time cauſed ſome of his men to fill our baricoes with water, and to help our men to bear wood into their boat; and then he put on his beſt ſilk coat, and his collar of pearls, and came aboard again, and brought his preſent with him; and thus having more reſpect unto his preſent than to his perſon, becauſe I perceived him to be vain glorious, I bade him welcome, and gave him a diſh of figs; and then he declared unto me that his father was a gentleman, and that he was able to ſhew me pleaſure, and not Gabriel, who was but a prieſt's ſon.

28. After their departure from us we weighed, and plyed all the ebb to the windwards, the wind being northerly, and towards night it waxed very ſtormy, ſo that of force we were conſtrained to go room with Cape St. John again, in which ſtorm we loſt our ſkiff at our ſtern that we bought at Wardhouſe, and there we rode until the fourth of July. The latitude of Cape St. John is 66° 50′. And it is to be noted, that the land of Cape St. John is of height from the full ſea mark, as I judge, ten fathoms, being clean without any trees growing, and alſo without ſtones or rocks, and conſiſts only of black earth, which is ſo rotten that if any of it fall into the ſea, it will ſwim as though it were a piece of wood. In which place, about three leagues from the ſhore, you ſhall not have above nine fathom water and clay ground.

July 4. Saturday at a N. N. W. ſun, the wind came at E. N. E. and then we weighed and plyed to the northwards; and as we were two leagues ſhot paſt the cape, we ſaw a houſe ſtanding in a valley, which is dainty to be ſeen in thoſe parts, and by and by I ſaw three men on the top of the hill: then I judged them, as it afterwards proved, that they were men which came from ſome other place to ſet traps to take vermin for their furs; which traps we did perceive very thick along the ſhore as we went.

5. Sunday at an E. ſun we were thwart off the creek where the Ruſſes lay, and there came to an anchor, and perceiving the moſt part of the lodias to be gone, we thought it not good to tarry any longer there, but weighed and ſpent all the ebb plying to the windwards.

6. Monday

6. Monday at a ſouth ſun it was high water. All along the coaſt it floweth little, only a ſouth moon makes a full ſea; and as we were a weighing we eſpied the Ruſſe lodias which we firſt loſt; they came out of a creek amongſt the ſandy hills; which hills begin fifteen leagues N. N. E. from Cape St. John.

7. Plying this ebb to an end, we came to an anchor ſix leagues N. N. E. from the place where we ſaw the Ruſſes come out; and there the Ruſſes harboured themſelves within a ſunk bank, but there was not water enough for us.

At a north ſun we weighed and plyed to the northwards, the land lying N. N. E. and S. S. W. until a ſouth ſun, and then we were in the latitude of 68° 30′.; and in this latitude end thoſe ſandy hills, and the land beginneth to lie N. and by W., S. and by E., and N. N. W., and to the weſtwards, and there the water beginneth to wax deep.

At a N. W. ſun we came to an anchor within half a league of the ſhore, where we had good plenty of fiſh, both haddocks and cods, riding in 10 fathom water.

8. Wedneſday we weighed and plyed nearer to the headland, which is called Caninoz, the wind being at E. and by N.

9. Thurſday the wind being ſcant, we turned to windwards the ebb, to get about Caninoz: the latitude this day at noon was 68° 40′.

10. Friday we turned to the windwards of the ebb, but to no purpoſe; and as we rode at an anchor, we ſaw the ſimilitude of a ſtorm riſing at N. N. W., and could not tell where to get rode nor ſuccour for that wind, and harbour we knew none; and that land which we rode under with that wind was a lee ſhore. And as I was muſing what was beſt to be done, I ſaw a ſail come out of a creek under the foreſaid Caninoz, which was my friend Gabriel, who forſook his harbour and company, and came as near us as he might, and pointed us to the eaſtwards, and then we weighed and followed him, and went E. and by S., the wind being at W. N. W. and very miſty.

11. Saturday we went E. S. E. and followed Gabriel, and he brought us into an harbour called Morgiovets, which is thirty leagues from Caninoz, and we had upon the bar going in two fathom and a fourth part; and after we were paſt in over the bar it waxed deeper, for we had five fathoms, four and a half, and three fathom, &c. Our bark being moored, I ſent ſome of our men to ſhore to provide wood, where they had plenty of drift wood, but none growing; and in this place we found plenty of young fowl, as gulls, ſeapies, and others, whereof the Ruſſes would eat none, whereof we were nothing ſorry, for there came the more to our part.

12. Sunday our men cut wood on ſhore and brought it aboard, and we ballaſted our ſhip with ſtones.

This morning Gabriel ſaw a ſmoke on the way, who rowed into it with his ſkiff, which ſmoke was two leagues from the place where we rode; and at a N. W. ſun he came aboard again, and brought with him a Samoed, which was but a young man; his apparel was then ſtrange unto us, and he preſented me with three young wild geeſe, and one young barnacle.

13. Monday I ſent a man to the main in Gabriel's boat, and he brought us aboard eight barricoes of freſh water: the latitude of the ſaid Margiovets is 68° 20′. It floweth there at a S. S. W. moon full ſea, and hieth two fathom and a half water.

14. At a W. N. W. ſun we departed from this place, and went E. twenty-five leagues, and then ſaw an iſland N. and by W. of us eight leagues, which iſland is called Dolgoieve; and from the eaſternmoſt part of this iſland there lieth a ſand E. and by S. ſeven leagues long.

15. Wedneſday at a N. and by E. ſun, Swetinoz was S. of us five leagues. This day at afternoon we went in over the dangerous bar of Pechora, and had upon the bar but one fathom water.

16. Thurſday we rode ſtill.

17. Friday I went on ſhore and obſerved the variation of the compaſs, which was 3° 30′ from the N. to the W. : the latitude this day was 69° 10′.

From two or three leagues to the eaſtward of Swetinoz, until the entering of the river Pechora, it is all ſandy hills, and towards Pechora the ſandy hills are very low.

It hieth on the bar of Pechora four feet water, and it floweth there at a S. W. moon a full ſea.

20. Monday at a N. and by E. ſun we weighed, and came out over the ſaid dangerous bar, where we had but five feet water, inſomuch that we found a foot leſs water coming out than we did going in. I think the reaſon was becauſe when we went in the wind was off the ſea, which cauſed the ſands to break on either ſide of us, and we kept in the ſmootheſt between the breaches, which we durſt not have done, except we had ſeen the Ruſſes to have gone in before us; and at our coming out the wind was off the ſhore, and fair weather, and then the ſands did not appear with breaches as at our going in: we thank God that our ſhip did draw ſo little water.

When we were a ſea board the bar the wind ſcanted upon us, and was at E. S. E. inſomuch that we ſtopped the ebbs, and plied all the floods to the windwards, and made our way E. N. E.

21. Tueſday at a N. W. ſun, we thought that we had ſeen land at E. or E. and by N., of us, which afterwards proved to be a monſtrous heap of ice.

Within a little more than half an hour after we firſt ſaw this ice, we were encloſed within it before we were aware of it, which was a fearful ſight to ſee; for, for the ſpace of ſix hours, it was as much as we could do to keep our ſhip aloof from one heap of ice, and bear roomer from another, with as much wind as we might bear acourſe; and when we had paſſed from the danger of this ice, we lay to the eaſtwards cloſe by the wind.

22. The next day we were again troubled with the ice.

23. Thurſday being calm we plied to the windwards, the wind being northerly: we had the latitude this day at noon in 70° 11′.

We had not run paſt two hours N. W., the wind being at N. N. E. and N. E. and by N. a good gale, but we met again with another heap of ice: we weathered the head of it, and lay a time to the ſeawards, and made way W. ſix leagues.

24. Friday at a S. E. ſun we caſt about to the eaſtwards, the wind being at N. N. E.: the latitude this day at noon was 70° 15′.

25. On St. James his day, bolting to the windwards, we had the latitude at noon in 70° 20′. The ſame day at a S. W. ſun, there was a monſtrous whale aboard of us, ſo near to our ſide that we might have thruſt a ſword or any other weapon in him, which we durſt not do for fear he ſhould have overthrown our ſhip; and then I called my company together, and all of us ſhouted, and with the cry that we made he departed from us: there was as much above water of his back as the breadth of our pinnace, and at his falling down he made ſuch a terrible noiſe in the water, that a man would greatly have marvelled, except he had known the cauſe of it; but God be thanked we were quietly delivered of him. And a little after we ſpied certain iſlands, with which we bare, and found good harbour in fifteen or eighteen fathom, and black oze: we came to an anchor at a N. E. ſun, and named the iſland St. James his iſland, where we found freſh water.

26. Sunday much wind blowing, we rode ſtill.

27. Monday I went on ſhore and took the latitude, which was 70° 42′. The variation of the compaſs was 7° 30′ from the N. to the W.

28. Tueſday we plied to the weſtwards along the ſhore, the wind being at N. W., and as I was about to come to anchor, we ſaw a ſail coming about the point, whereunder we thought to have anchored; then I ſent a ſkiff aboard of him, and at their coming aboard they took acquaintance of them, and the chief man ſaid he had been in our company in the river Cola, and alſo declared unto them that we were paſt the way which ſhould bring us to the Ob. This land, ſaid he, is called Nova Zembla, that is to ſay, the New Land; and then he came aboard himſelf with his ſkiff, and at his coming aboard he told me the like; and ſaid further, that in this Nova Zembla is the higheſt mountain in the world, as he thought, and that Camen Bolſhay, which is on the main of Pechora, is not to be compared to this mountain, but I ſaw it not: he made me alſo certain demonſtrations of the way to the Ob, and ſeemed to make haſte on his own way, being very loth to tarry, becauſe the year was far paſt, and his neighbour had fet Pechora, and not he; ſo I gave him a ſteel glaſs, two pewter ſpoons, and a pair of velvet ſheathed knives, and then he ſeemed ſomewhat the more willing to tarry, and ſhewed me as much as he knew for our purpoſe; he alſo gave me ſeventeen wild geeſe, and ſhewed me that four of their lodias were driven per force from Caninoze to this Nova Zembla. This man's name was Loſhak.

29. Wedneſday as we plied to the eaſtwards, we eſpied another ſail, which was one of this Loſhak's company, and we bare room and ſpake with him, who in like ſort told us of the Ob, as the other had done.

30. Thurſday we plied to the eaſtwards, the wind being at E. N. E.

31. Friday the gale of wind began to increaſe, and came weſterly withal, ſo that by a N. W. ſun we were at an anchor among the iſlands of Vaigats, where we ſaw two ſmall lodias, the one of them came aboard of us and preſented me with a great loaf of bread; and they told me that they were all of Colmogro, except one man that dwelt at Pechora, who ſeemed to be the chiefeſt among them in killing of the morſe.

There were ſome of their company on ſhore which did chaſe a white bear over the high cliffs into the water, which bear the lodia that was aboard of us killed in our ſight.

This day there was a great gale of wind at N., and we ſaw ſo much ice driving a ſeaboard, that it was then no going to ſea.

Auguſt 1. Saturday I went aſhore, and there I ſaw three morſes that they had killed: they held one tooth of a morſe, which was not great, at a roble, and one white bear ſkin at three robles and two robles: they further told me that there were people called Samoeds on the great iſland, and that they would not abide them nor us, who have no houſes, but only coverings made of deers' ſkins, ſet over them with ſtakes: they are men expert in ſhooting, and have great plenty of deer.

This night there fell a cruel ſtorm, the wind being at W.

2. Sunday we had very much wind, with plenty of ſnow, and we rode with two anchors a-head.

3. Monday we weighed and went room with another iſland, which was five leagues E. N. E. from us; and there I met again with Loſhak, and went on ſhore with him, and he brought me to a heap of the Samoeds' idols, which were in number about three hundred, the worſt and the moſt unartificial work that ever I ſaw: the eyes and mouths of ſundry of them were bloody; they had the ſhape of men, women, and children, very groſsly wrought; and that which they had made for other parts was alſo ſprinkled with blood. Some of their idols were an old ſtick with two or three notches, made with a knife in it. I ſaw much of the footing of the ſaid Samoeds, and of the ſleds that they ride in. There was one of their ſleds broken, and lay by the heap of idols;

and there I ſaw a deer's ſkin which the fowls had ſpoiled; and before certain of their idols blocks were made as high as their mouths, being all bloody, I thought that to be the table whereon they offered their ſacrifice: I ſaw alſo the inſtruments whereupon they had roaſted fleſh, and as far as I could perceive they make their fire directly under the ſpit.

Loſhak being there preſent told me that theſe Samoeds were not ſo hurtful as they of Obare, and that they have no houſes, as indeed I ſaw none, but only tents made of deers' ſkins, which they under-prop with ſtakes and poles: their boats are made of deers' ſkins, and when they come on ſhore they carry their boats with them upon their backs; for their carriages they have no other beaſts to ſerve them but deer only. As for bread and corn they have none, except the Ruſſes bring it to them: their knowledge is very baſe, for they know no letter.

4. Tueſday we turned for the harbour where Loſhak's bark lay, whereas before we rode under an iſland; and there he came aboard of us, and ſaid unto me, if God ſend wind and weather to ſerve I will go to the Ob with you, becauſe the morſes were ſcant at theſe iſlands of Vaigats; but if he could not get to the river of Ob, then he ſaid he would go to the river of Naramzay, where the people were not altogether ſo ſavage as the Samoeds of the Ob are: he ſhewed me that they will ſhoot at all men to the uttermoſt of their power, that cannot ſpeak their ſpeech.

5. Wedneſday we ſaw a terrible heap of ice approach near unto us, and therefore we thought good with all ſpeed poſſible to depart from thence, and ſo I returned to the weſtwards again to the iſland where we were the thirty-firſt of July.

6. Thurſday I went aſhore and took the latitude, which was 70° 25′; and the variation of the compaſs was 8° from the N. to the W.

Loſhak and the two ſmall lodias of Pechora departed from this iſland, while I was on ſhore taking the latitude, and went to the ſouthwards: I marvelled why he departed ſo ſuddenly, and went over the ſhoals amongſt the iſlands where it was impoſſible for us to follow them; but after I perceived them to be weatherwiſe.

7. Friday we rode ſtill, the wind being at N. N. E. with a cruel ſtorm: the ice came in ſo abundantly about us at both ends of the iſland that we rode under, that it was a fearful ſight to behold: the ſtorm continued with ſnow, rain, and hail plenty.

8. Saturday we rode ſtill alſo, the ſtorm being ſomewhat abated, but it was altogether miſty, that we were not able to ſee a cable's length about us, the wind being at N. E. and by E.

9. Sunday, at four of the clock in the morning, we departed from this iſland, the wind being at S. E., and as we were clear a ſeaboard the ſmall iſlands and ſhoals, it came ſo thick with miſts that we could not ſee a baſe ſhot from us; then we took in all our ſails to make little way.

At a S. E. ſun it waxed clear, and then we ſet our ſails, and lay cloſe by the wind to the ſouthwards alongſt the iſlands of Vaigats. At a W. ſun we took in our ſail again, becauſe of the great miſt and rain. We ſounded at this place, and had five-and-twenty fathoms water, and ſoft black oze, being three leagues from the ſhore, the wind being at S. and by E. but ſtill miſty.

10. Monday at an E. ſun we ſounded, and had forty fathoms, and oze, ſtill miſty. At noon we ſounded again, and had thirty-ſix fathom, ſtill miſty.

11. Tueſday at an E. N. E. ſun we let fall our anchor in three-and-twenty fathom, the miſt ſtill continuing.

12. Wedneſday, at three of the clock in the morning, the miſt brake up, the wind being at N. E. and by E. and then we ſaw part of the iſlands of Vaigats, which we bare withal, and went E. S. E. cloſe by the wind: at a W. ſun we were at an anchor under

the S. W. part of the ſaid Vaigats, and then I ſent our ſkiff to ſhore with three men in her, to ſee if they might ſpeak with any of the Samoeds, but could not: all that day was rainy but not windy.

13. Thurſday the wind came weſterly, ſo that we were fain to ſeek us another place to ride in, becauſe the wind came a ſea board land, and although it were miſty, yet we followed the ſhore by our lead: and as we brought land in the wind of us, we let fall our anchor. At a W. ſun the miſt brake up ſo that we might ſee about us, and then we might perceive that we were entered into a ſound.

This afternoon we took in two or three ſkiffs' lading of ſtones to baläſt our ſhip withal. It hieth here four feet water, and floweth by fits uncertain to be judged.

14. Friday we rode ſtill in the ſound, the wind at S. W., with very much rain, and at the end of the rain it waxed again miſty.

15. Saturday there was much wind at W. and much rain, and then again miſty.

16. Sunday was very miſty and much wind.

17. Monday very miſty, the wind at W. N. W.

18. Tueſday was alſo miſty, except at noon: then the ſun brake out through the miſt, ſo that we had the latitude in 70° 10′: the afternoon was miſty again, the wind being at W. N. W.

19. Wedneſday at three of the clock afternoon the miſt brake up, and the wind came at E. N. E., and then we weighed, and went S. and by E. until ſeven of the clock eight leagues, thinking to have had ſight of the ſandy hills that are to the eaſtwards of the river Pechora. At a N. W. ſun we took in our mainſail, becauſe the wind increaſed, and went with a foreſail W. N. W. the wind being at E. N. E.: at night there grew ſo terrible a ſtorm, that we ſaw not the like, although we had endured many ſtorms ſince we came out of England. It was wonderful that our bark was able to brook ſuch monſtrous and terrible ſeas, without the great help of God, who never faileth them at need, that put their ſure truſt in him.

20. Thurſday at a S. S. W. ſun, thanks be to God, the ſtorm was at the higheſt, and then the wind began to ſlack, and came northerly withal, and then I reckoned the weſtermoſt point of the river Pechora to be S. of us fifteen leagues. At a W. S. W. ſun we ſet our mainſail, and lay cloſe by the wind, the wind being at N. W. and by N., making but little way, becauſe the billow went ſo high: at midnight we caſt about, and the ſhip caped N. N. E. making little way.

21. Friday at noon we had the latitude in 70° 8′, and we ſounded and had twenty-nine fathoms ſand, and in manner ſtreamy ground. At a W. ſun we caſt about to the weſtwards, and a little after the wind came up at W.

22. Saturday was calm: the latitude this day at noon was 70° 20′, we ſounded here, and had nine-and-forty fathom and oze, which oze ſignified that we drew towards Nova Zembla.

And thus we being out of all hope to diſcover any more to the eaſtward this year, we thought it beſt to return and that for three cauſes.

The firſt the continual N. E. and northerly winds, which have more power after a man is paſt to the eaſtwards of Caninoze, than in any place that I do know in theſe northerly regions.

Second, becauſe of great and terrible abundance of ice which we ſaw with our eyes, and we doubt greater ſtore abideth in thoſe parts: I adventured already ſomewhat too far in it, but I thank God for my ſafe deliverance from it.

Third, becauſe the nights waxed dark, and the winter began to draw on with his ſtorms: and therefore I reſolved to take the firſt beſt wind that God ſhould ſend, and

ply towards the bay of St. Nicholas, and to ſee if we might do any good there, if God would permit it.

This preſent Saturday we ſaw very much ice, and were within two or three leagues of it: it ſhewed unto us as though it had been a firm land as far as we might ſee from N. W. off us to the eaſtwards: and this afternoon the Lord ſent us a little gale of wind at S., ſo that we bare clear off the weſtermoſt part of it, thanks be to God. And then againſt night, it waxed calm again, and the wind was at S. W.: we made our way until Sunday noon N. W. and by W., and then we had the latitude in 70° 30′, the wind at S. W.: there was a billow ſo that we could not diſcern to take the latitude exactly, but by a reaſonable gueſs.

24. Monday there was a pretty gale of wind at S., ſo that we went W. and by S., the latitude this day at noon was 70° 10′: we had little wind all day: at a W. N. W. ſun we ſounded, and had twenty-nine fathoms black ſandy oze, and then we were N. E. five leagues from the N. E. part of the iſland Colgoieve.

25. Tueſday the wind all weſterly we plied to the windwards.

26. Wedneſday the wind was all weſterly, and calm; we had the latitude this day in 70° 10′, we being within three leagues of the north part of the iſland Colgoieve.

27. Thurſday we went room about the weſtermoſt part of the iſland, ſeeking where we might find a place to ride in for a N. W. wind, but could find none, and then we caſt about again to the ſeawards, and the wind came at W. S. W., and this morning we had plenty of ſnow.

28. Friday, the wind being at S. W. and by W. we plied to the windwards.

29. Saturday, the wind being at S. we plied to the weſtwards, and at afternoon the miſt brake up and then we might ſee the land ſeven or eight leagues to the eaſtward of Caninoze: we ſounded a little before and had thirty-five fathoms and oze. And a while after we ſounded again, and had nineteen fathom and ſand: then we were within three leagues and a half of the ſhore, and towards night there came down ſo much wind, that we were fain to bring our ſhip atrie, and laid her head to the weſtwards.

30. Sunday, the wind became more calm, and then it waxed very miſty: at noon we caſt about to the eaſtwards, the wind being at S., and ran eight hours on that board, and then we caſt about and caped W. S. W.: we ſounded and had thirty-two fathoms, and tough oze like clay.

31. Monday, we doubled about Caninoze, and came at an anchor there, to the intent we might kill ſome fiſh if God would permit it, and there we gat a great nuſe, which nuſes were there ſo plenty, that they would ſcarcely ſuffer any other fiſh to come near the hooks: they ſaid nuſes carried away ſundry of our hooks and leads.

A little after at a W. ſun, the wind began to blow ſtormy at W. S. W. ſo that we were fain to weigh and forſake our fiſhing ground, and went cloſe by the wind S. W. and S. W. and by W., making our way S. S. W.

September 1. Tueſday at a W. ſun we ſounded and had twenty fathoms, and broken wilkeſhells: I reckoned Caninoze to be twenty-four leagues N. N. E. from us.

11. The eleventh day we arrived at Colmogro, and there we wintered, expecting the approach of next ſummer to proceed farther in our intended diſcovery for the Ob: which (by reaſon of our employments to Wardhouſe the next ſpring for the ſearch of ſome Engliſh ſhips) was not accordingly performed.

CERTAIN Notes unperfectly written by Richard Johnſon ſervant to maſter Richard Chancelour, which was in the Diſcovery of Vaigatz and Nova Zembla, with Steven Burrowe in the Serchthrift, 1556, and afterward among the Samoeds, whoſe deviliſh Rites he deſcribeth.

FIRST, after we departed out of England we fell with Norway, and on that coaſt lieth Northbern or Northbergin, and this people are under the king of Denmark: but they differ in their ſpeech from the Danes, for they ſpeak Norſh. And north of Northbern, lie the iſles of Roſt and Lofoot, and theſe iſlands pertain unto Finmark, and they keep the laws and ſpeak the language of the iſlanders. And at the eaſtermoſt part of that land is a caſtle which is called the Wardhouſe, and the king of Denmark doth fortify it with men of war: and the Ruſſes may not go to the weſtward of that caſtle. And E. S. E. from that caſtle is a land called Lappia: in which land be two manner of people, that is to ſay, the Lappians, and the Scrickfinns, which Scrickfinns are a wild people which neither know God, nor yet good order: and theſe people live in tents made of deer ſkins: and they have no certain habitations, but continue in herds and companies by one hundred and two hundreds. And they are a people of ſmall ſtature, and are clothed in deers' ſkins, and drink nothing but water, and eat no bread but fleſh all raw. And the Lappians be a people adjoining to them, and be much like to them in all conditions, but the Emperor of Ruſſia hath of late overcome many of them, and they are in ſubjection to him. And this people will ſay that they believe in the Ruſſes' God. And they live in tents as the other do. And S. E. and by S. from Lappia, lieth a province called Corelia, and theſe people are called Kerilli. And S. S. E. from Corelia lieth a country called Novogardia. And theſe three nations are under the Emperor of Ruſſia, and the Ruſſes keep the law of the Greeks in their churches, and write ſomewhat like as the Greeks write, and they ſpeak their own language, and they abhor the Latin tongue, neither have they to do with the pope of Rome, and they hold it not good to worſhip any carved image, yet they will worſhip painted images on tables or boards. And in Ruſſia their churches, ſteeples and houſes are all of wood: and their ſhips that they have are ſowed with withes and have no nails. The Kerilles, Ruſſians and Moſcovians be much alike in all conditions. And S. from the Moſcovians lie the Tartarians, which be Mahometans, and live in tents and waggons, and keep in herds and companies: and they hold it not good to abide long in one place, for they will ſay, when they will curſe any of their children, I would thou mighteſt tarry ſo long in a place that thou mighteſt ſmell thine own dung, as the chriſtians do: and this is the greateſt curſe that they have. And E. N. E. of Ruſſia lieth Lampas, which is a place where the Ruſſes, Tartars, and Samoeds meet twice a year, and make the fair to barter wares for wares. And N. E. from Lampas lieth the country of the Samoeds, which be about the river of Pechere, and theſe Samoeds be in ſubjection to the Emperor of Ruſſia, and they lie in tents made of deer ſkins, and they uſe much witchcraft, and ſhoot well in bows. And N. E. from the river Pechere lieth Vaigatz, and there are the wild Samoeds which will not ſuffer the Ruſſes to land out of the ſea, but they will kill them and eat them, as we are told by the Ruſſes: and they live in herds, and have all their carriages with deer, for they have no horſes. Beyond Vaigatz lieth a land called Nova Zembla, which is a great land, but we ſaw no people, and there we had fowl enough, and there we ſaw white foxes and white bears. And the ſaid Samoeds which are about the banks of Pechere, which are in ſubjection to the Empe-

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ror of Ruſſia, when they will remove from one place to another, then they will make ſacrifices in manner following. Every kindred doth ſacrifice in their own tent, and he that is moſt ancient is their prieſt. And firſt the prieſt doth begin to play upon a thing like to a great ſieve, with a ſkin on the one end like a drum: and the ſtick that he playeth with is about a ſpan long, and one end is round like a ball, covered with the ſkin of an hart. Alſo the prieſt hath upon his head a thing of white like a garland, and his face is covered with a piece of a ſhirt of mail, with many ſmall ribs, and teeth of fiſhes, and wild beaſts hanging on the ſame mail. Then he ſingeth as we uſe here in England to hallow, whope, or ſhout at hounds, and the reſt of the company anſwer him with this owtis, *igha, igha, igha,* and then the prieſt replieth again with his voices. And they anſwer him with the ſelf-ſame words ſo many times, that in the end he becometh as it were mad, and falling down as he were dead, having nothing on him but a ſhirt, lying upon his back I might perceive him to breathe. I aſked them why he lay ſo, and they anſwered me, now doth our God tell him what we ſhall do, and whither we ſhall go. And when he had lain ſtill a little while, they cried thus three times together, *oghao, oghao, oghao,* and as they uſe theſe three calls he riſeth with his head and lieth down again, and then he roſe up and ſang with like voices as he did before: and his audience anſwered him *igha, igha, igha.* Then he commanded them to kill five olens or great deer, and continued ſinging ſtill both he and they as before. Then he took a ſword of a cubit and a ſpan long, (I did mete it myſelf) and put it into his belly halfway and ſometime leſs, but no wound was to be ſeen, (they continuing in their ſweet ſong ſtill). Then he put the ſword into the fire till it was warm, and ſo thruſt it into the ſlit of his ſhirt and thruſt it through his body, as I thought, in at his navel and out at his fundament: the point being out of his ſhirt behind, I laid my finger upon it, then he pulled out the ſword and ſat down. This being done, they ſet a kettle of water over the fire to heat, and when the water doth ſeeth, the prieſt beginneth to ſing again they anſwering him, for ſo long as the water was in heating they ſat and ſang not. Then they made a thing being four ſquare, and in height and ſquareneſs of a chair, and covered with a gown very cloſe the fore part thereof, for the hinder part ſtood to the tent's ſide. Their tents are round and are called *chome* in their language. The water ſtill ſeething on the fire, and this ſquare ſeat being ready, the prieſt put off his ſhirt, and the thing like a garland which was on his head, with thoſe things which covered his face, and he had on yet all this while a pair of hoſen of deers' ſkins with the hair on, which came up to his buttocks. So he went into the ſquare ſeat, and ſat down like a taylor and ſang with a ſtrong voice or hallowing. Then they took a ſmall line made of deers' ſkins of four fathoms long, and with a ſmall knot the prieſt made it faſt about his neck, and under his left arm, and gave it unto two men ſtanding on both ſides of him, which held the ends together. Then the kettle of hot water was ſet before him in the ſquare ſeat, all this time the ſquare ſeat was not covered, and then it was covered with a gown of broad cloth without lining, ſuch as the Ruſſes do wear. Then the two men which did hold the ends of the line ſtill ſtanding there, began to draw, and drew till they had drawn the ends of the line ſtiff and together, and then I heard a thing fall into the kettle of water which was before him in the tent. Thereupon I aſked them that ſat by me what it was that fell into the water that ſtood before him. And they anſwered me, that it was his head, his ſhoulder, and left arm, which the line had cut off, I mean the knot which I ſaw afterward drawn hard together. Then I roſe up and would have looked whether it were ſo or not, but they laid hold on me, and ſaid, that if they ſhould ſee him with their bodily eyes, they ſhould live no longer. And the moſt part of them can ſpeak the Ruſſe tongue to be underſtood:

and

and they took me to be a Ruſſian. Then they began to hallow with theſe words, *oghaoo, oghaoo, oghaoo*, many times together. And as they were thus ſinging and out-calling, I ſaw a thing like a finger of a man two times together thruſt through the gown from the prieſt. I aſked them that ſat next to me what it was that I ſaw, and they ſaid not his finger; for he was yet dead: and that which I ſaw appear through the gown was a beaſt, but what beaſt they knew not nor would not tell. And I looked upon the gown, and there was no hole to be ſeen: and then at the laſt the prieſt lifted up his head with his ſhoulder and arm, and all his body, and came forth to the fire. Thus far of their ſervice which I ſaw during the ſpace of certain hours: but how they do worſhip their idols that I ſaw not: for they put up their ſtuff for to remove from that place where they lay. And I went to him that ſerved the prieſt, and aſked him what their God ſaid to him when he lay as dead. He anſwered that his own people doth not know, neither is it for them to know: for they muſt do as he commanded. This I ſaw the fifth day of January in the year of our Lord 1556 after the Engliſh account.

Of the Permians, Samoites, and Lappes.

(Hakluyt I. 491.)

THE Permians and Samoites that lye from Ruſſia, N. and N. E. are thought likewiſe to have taken their beginning from the Tartar kind. And it may partly be gueſſed by the faſhion of their countenance, as having all broad and flat faces as the Tartars have, except the Chircaſſes. The Permians are accounted for a very ancient people. They are now ſubject to the Ruſſe. They live by hunting and trading with their furs, as alſo doth the Samoit, that dwelleth more towards the North Sea. The Samoit hath his name (as the Ruſſe ſaith) of eating himſelf: as if in times paſt they lived as the cannibals, eating one another. Which they make more probable, becauſe at this time they eat all kind of raw fleſh, whatſoever it be, even the very carrion that lieth in the ditch. But as the Samoits themſelves will ſay, they were called Samoie, that is, of themſelves as though they were indigene, or people bred upon that very ſoil, that never changed their ſeat from one place to another, as moſt nations have done. They are ſubject at this time to the Emperor of Ruſſia.

I talked with certain of them, and find that they acknowledge one God: but repreſent him by ſuch things as they have moſt uſe and good by. And therefore they worſhip the ſun, the ollen, the loſh, and ſuch like. As for the ſtory of Slata Baba, or the golden hag, (which I have read in ſome maps, and deſcriptions of theſe countries, to be an idol after the form of an old woman) that being demanded by the prieſt, giveth them certain oracles, concerning the ſucceſs and event of things, I found to be a very fable. Only in the province of Obdoria upon the ſea ſide, near to the mouth of the great river Obba, there is a rock, which naturally (being ſomewhat helped by imagination) may ſeem to bear the ſhape of a ragged woman, with a child in her arms (as the rock by the North Cape the ſhape of a friar,) where the Obdorian Samoites uſe much to reſort, by reaſon of the commodity of the place for fiſhing: and there ſometime (as their manner is) conceive and practiſe their ſorceries, and ominous conjecturings about the good or bad ſpeed of their journies, fiſhings, huntings, and ſuch like.

They are clad in ſeal ſkins, with the hair ſide outwards down as low as the knees, with their breeches and netherſtocks of the ſame, both men and women. They are all black haired, naturally beardleſs. And therefore the men are hardly diſcerned from the women by their looks: ſave that the women wear a lock of hair down along both their

their ears. They live in a manner a wild and ſavage life, roving ſtill from one place of the country to another, without any property of houſe or land more to one than to another. Their leader or director in every company, is their papa or prieſt.

On the north ſide of Ruſſia next to Corelia, lieth the country of Lappia, which reacheth in length from the fartheſt point northward, (towards the North Cape) to the fartheſt part S. E. (which the Ruſſe calleth Sweetneſſe or Holy Noſe, the Engliſhmen Cape-grace) about three hundred and forty-five verſt or miles. From Sweetneſſe to Candelox by the way of Verſega (which meaſureth the breadth of that country) is ninety miles or thereabouts. The whole country in a manner is either lakes or mountains, which towards the ſea ſide are called Tondro, becauſe they are all of hard and craggy rock, but the inland parts are well furniſhed with woods that grow on the hills ſides, the lakes lying between. Their diet is very bare and ſimple. Bread they have none, but feed only upon fiſh and fowl. They are ſubject to the Emperor of Ruſſia, and the two kings of Sweden and Denmark: which all exact tribute and cuſtom of them (as was ſaid before,) but the Emperor of Ruſſia beareth the greateſt hand over them, and exacteth of them far more than the reſt. The opinion is that they were firſt termed Lappes of their brief and ſhort ſpeech. The Ruſſe divideth the whole nation of the Lappes into two ſorts. The one they call Nowremanſkoy Lapary, that is the Norwegian Lappes becauſe they be of the Daniſh religion. For the Danes and Norwegians they account for one people. The other that have no religion at all but live as brute and heatheniſh people, without God in the world, they call Dikoy Lapary, or the wild Lappes.

The whole nation is utterly unlearned, having not ſo much as the uſe of any alphabet, or letter among them. For practice of witchcraft and ſorcery they paſs all nations in the world. Though for enchanting of ſhips that ſail along their coaſt, (as I have heard it reported,) and their giving of winds good to their friends, and contrary to other, whom they mean to hurt by tying of certain knots upon a rope, (ſomewhat like to the tale of Eolus his windbag) is a very fable, deviſed (as may ſeem) by themſelves, to terrify ſailors for coming near their coaſt. Their weapons are the long bow, and hand gun, wherein they excel, as well for quickneſs to charge and diſcharge, as for nearneſs at the mark by reaſon of their continual practice (whereto they are forced) of ſhooting at wild fowl. Their manner is in ſummer time to come down in great companies to the ſea ſide, to Wardhuyſe, Cola, Kegor, and the bay of Vedagoba, and there to fiſh for cod, ſalmon, and but-fiſh, which they ſell to the Ruſſes, Danes, and Norwegians, and now of late to the Engliſhmen that trade thither with cloth, which they exchange with the Laps and Corelians for their fiſh, oil, and furs, whereof alſo they have ſome ſtore. They hold their mart at Cola on St. Peter's day: what time the captain of Wardhuyſe (that is reſiant there for the king of Denmark,) muſt be preſent, or at leaſt ſend his deputy to ſet prices upon their ſtock fiſh, train oil, furs and other commodities: as alſo the Ruſſe Emperor's cuſtomer, or tribute taker, to receive his cuſtom which is ever paid before any thing can be bought or ſold. When their fiſhing is done, their manner is to draw their carbaſſes or boats on ſhore, and there to leave them with the keel turned upwards, till the next ſpring tide. Their travel to and fro is upon ſleds drawen by the olen deer: which they uſe to turn a grazing all the ſummer time in an iſland called Kildyn, (of a very good ſoil compared with other parts of that country) and towards the winter time, when the ſnow beginneth to fall, they fetch them home again for the uſe of their ſled.

A LEARNED Epiſtle written 1581 unto the famous Coſmographer M. Gerard Mercator, concerning the River Pechora, Naramſay, Cara reca, the mighty River of Ob, the Place of Taks Olguſh in Siberia, the great River Ardoh, the Lake of Kittay called of the Borderers Paraha, the Country of Carrah Colmak, giving good Light to the Diſcovery of the north-eaſt Paſſage to Cathay, China, and the Malucaes.

(HAKLUYT I. 509)

To the famous and renowned Gerard Mercator, his reverend and ſingular friend at Duiſburgh in Cliveland theſe be delivered.

CALLING to remembrance (moſt dear friend) what exceeding delight you took at our being together, in reading the geographical writings of Homer, Strabo, Ariſtotle, Pliny, Dion, and the reſt, I rejoiced not a little that I happened upon ſuch a meſſenger as the bearer of theſe preſents, (whom I do eſpecially recommend unto you) who arrived lately here at Aruſburg upon the river of Oſella. This man's experience (as I am of opinion) will greatly avail you to the knowledge of a certain matter which hath been by you ſo vehemently deſired, and ſo curiouſly laboured for, and concerning the which the late coſmographers do hold ſuch variety of opinions: namely, of the diſcovery of the huge promontory of Tabin, and of the famous and rich countries ſubject to the Emperor of Cathay, and that by the N. E. ocean ſea. The man is called Alferius being by birth a Netherlander, who for certain years lived captive in the dominions of Ruſſia under two famous men Yacovius and Unekius, by whom he was ſent to Antwerp to procure ſkilful pilots and mariners, (by propounding liberal rewards) to go unto the two famous perſonages aforeſaid, which two had ſet a Sweden ſhipwright on work to build two ſhips for the ſame diſcovery upon the river of Dwina. The paſſage unto Cathay by the N. E. (as he declareth the matter, albeit without art, yet very aptly, as you may well perceive, which I requeſt you diligently to conſider) is without doubt very ſhort and eaſy. This very man himſelf hath travelled to the river of Ob, both by land, through the countries of the Samoeds, and of Sibier, and alſo by ſea, along the coaſt of the river Pechora eaſtward. Being encouraged by this his experience he is fully reſolved with himſelf to conduct a bark laden with merchandiſe (the keel whereof he will not have to draw over much water) to the bay of St. Nicholas in Ruſſia, being furniſhed with all things expedient for ſuch a diſcovery, and with a new ſupply of victuals at his arrival there, and alſo to hire into his company certain Ruſſes beſt known unto himſelf, who can perfectly ſpeak the Samoeds' language, and are acquainted with the river of Ob, as having frequented thoſe places year by year.

Whereupon about the end of May he is determined to ſail from the bay of St. Nicholas eaſtward, by the main of Joughoria, and ſo to the eaſterly parts of Pechora, and to the iſland which is called Dolgoia. And here alſo he is purpoſed to obſerve the latitudes, to ſurvey and deſcribe the country, to ſound the depth of the ſea, and to note the diſtances of places, where, and ſo oft, as occaſion ſhall be offered. And forasmuch as the bay of Pechora is a moſt convenient place both for harbour and victual, as well in their going forth as in their return home in regard of ice and tempeſt, he is determined to beſtow a day in ſounding the flats, and in ſearching out the beſt entrance for ſhips: in which place heretofore he found the water to be but five feet deep, howbeit he doubteth not but that there are deeper channels: and then he intendeth to proceed on

along

along thoſe coaſts for the ſpace of three or four leagues, leaving the iſland called Vaigats almoſt in the middle way between Ugoria and Nova Zembla, then alſo to paſs by a certain bay between Vaigats and Ob, trending ſoutherly into the land of Ugoria, whereinto fall two ſmall rivers called Marmeſia and Carah, upon the which rivers do inhabit another barbarous and ſavage nation of the Samoeds. He found many flats in that tract of land, and many cataracts or overfalls of water, yet ſuch as he was able to ſail by. When he ſhall come to the river of Ob, which river (as the Samoeds report) hath ſeventy mouths, which by reaſon of the huge breadth thereof, containing many and great iſlands, which are inhabited with ſundry ſorts of people, no man ſcarcely can well diſcover, becauſe he will not ſpend too much time, he purpoſeth to ſearch three or four at the moſt of the mouths thereof, thoſe chiefly which ſhall be thought moſt commodious by the advice of the inhabitants, of whom he meaneth to have certain with him in his voyage, and meaneth to employ three or four boats of that country in ſearch of theſe mouths, as near as poſſibly he can to the ſhore, which within three days journey of the ſea is inhabited, that he may learn where the river is beſt navigable. If it ſo fall out that he may ſail up the river Ob againſt the ſtream, and mount up to that place which heretofore accompanied with certain of his friends, he paſſed unto by land through the country of Siberia, which is about twelve days journey from the ſea, where the river Ob falleth into the ſea, which place is in the continent near the river Ob, and is called Yaks Olguſh, borrowing his name from that mighty river which falleth into the river Ob, then doubtleſs he would conceive full hope that he had paſſed the greateſt difficulties: for the people dwelling thereabout report, which were three days ſailing only from that place beyond the river Ob, whereby the breadth thereof may be gathered (which is a rare matter there, becauſe that many rowing with their boats of leather one day's journey only from the ſhore, have been caſt away in tempeſt, having no ſkill to guide themſelves neither by ſun nor ſtar) that they have ſeen great veſſels laden with rich and precious merchandiſe brought down that great river by black or ſwart people. They call that river Ardoh, which falleth into the lake of Kittay, which they call Paraha, whereupon bordereth that mighty and large nation which they call Carrah Colmak, which is none other than the nation of Cathay. There, if need require, he may fitly winter and refreſh himſelf and his, and ſeek all things which he ſhall ſtand in need of: which if it ſo fall out, he doubteth not but in the mean while he ſhall be much furthered in ſearching and learning out many things in that place. Howbeit, he hopeth that he ſhall reach to Cathay that very ſummer, unleſs he be hindered by great abundance of ice at the mouth of the river of Ob, which is ſometimes more and ſometimes leſs. If it ſo fall out, he then purpoſeth to return to Pechora, and there to winter; or if he cannot do ſo neither, then he meaneth to return to the river of Dwina, whither he will reach in good time enough, and ſo the next ſpring following to proceed on his voyage. One thing in due place I forgat before.

The people which dwell at that place called Yaks Olguſh, affirm that they have heard their forefathers ſay, that they have heard moſt ſweet harmony of bells in the lake of Kitthay, and that they have ſeen therein ſtately and large buildings: and when they make mention of the people named Carrah Colmak (this country is Cathay) they fetch deep ſighs, and holding up their hands, they look up to heaven, ſignifying as it were, and declaring the notable glory and magnificence of that nation. I would this Oliver were better ſeen in coſmography, it would greatly further his experience, which doubtleſs is very great. Moſt dear friend, I omit many things, and I wiſh you ſhould hear the man himſelf which promiſed me faithfully that he would viſit you in his

way at Duiſburg, for he deſireth to confer with you, and doubtleſs you ſhall very much further the man. He ſeemeth ſufficiently furniſhed with money and friends, wherein and in other offices of courteſy I offered him my furtherance if it had pleaſed him to have uſed me. The Lord proſper the man's deſires and forwardneſs, bleſs his good beginnings, further his proceedings, and grant unto him moſt happy iſſue. Fare you well, good Sir, and my ſingular friend. From Aruſburg upon the river of Oſella, the 20th of February, 1581.

Your's wholly at commandment,
JOHN BALAK.

THE Letter of Gerard Mercator, written to M. Richard Hakluyt of Oxford, touching the intended Diſcovery of the North Eaſt Paſſage. An. 1580.*

(HAKLUYT Vol. I. p. 414.)

[Tranſlated from the Latin.]

SIR, I received your letters the 19th of June: it grieved me much that upon the ſight of them the time being ſpent, I could not give any convenient inſtructions: I wiſh Arthur Pet had been informed before his departure of ſome ſpecial points. The voyage to Cathaio by the eaſt, is doubtleſs very eaſy and ſhort, and I have oftentimes marvelled, that being ſo happily begun, it hath been left off, and the courſe changed into the weſt, after that more than half of your voyage was diſcovered. For beyond the iſland of Vaigats and Nova Zembla, there followeth preſently a great bay, which on the left ſide is encloſed with the mighty promontory Tabin.† Into the midſt hereof there fall great rivers, which paſſing through the whole country of Serica, and being as I think navigable with great veſſels into the heart of the continent, may be an eaſy means whereby to traffic for all manner of merchandiſe, and tranſport them out of Cathaio, Mangi, Mien, and other kingdoms thereabout into England. But conſidering with myſelf that that navigation was not intermitted, but upon great occaſion, I thought that the Emperor of Ruſſia and Moſcovy had hindered the proceeding thereof. If ſo be that with his grace and favour a further navigation may be made, I would counſel them certainly not firſt to ſeek out the promontory Tabin, but to ſearch this bay and rivers aforeſaid, and in them to pick and chuſe out ſome convenient port and harbour for the Engliſh merchants, from whence afterward with more opportunity and leſs peril, the promontory Tabin and all the coaſt of Cathaio may be diſcovered. And that there is ſuch a huge promontory called Tabin, I am certainly perſuaded not only out of Pliny, but alſo other writers, and ſome maps (though ſomewhat rudely drawn:) and that the pole of the loadſtone is not far beyond Tabin, I have learned by the certain obſervations of the loadſtone; about which pole and Tabin I think there are very many rocks, and very hard and dangerous ſailing: and yet a more hard and difficile paſſage I think it to be this way which is now attempted by the weſt, for it is nearer to the pole of the loadſtone, to the which I think it not ſafe to approach. And becauſe the loadſtone hath another pole than that of the world, to the which from all parts it

* In the original this letter follows ſome inſtructions for navigators by M. Richard Hakluyt of Eiton, in the county of Hereford eſquire, Anno 1580. Was this gentleman the father of our editor?

† This abſurd theory is founded upon a miſapprehenſion of the ancient geography.

hath a reſpect, the nearer you come unto it, the more the needle of the compaſs doth vary from the north, ſometimes to the weſt, and ſometimes to the eaſt, according as a man is to the eaſtward or to the weſtward of that meridian that paſſeth by both the poles of the magnet and the world.

This is a ſtrange alteration and very apt to deceive the ſailor, unleſs he know the unconſtancy and variation of the compaſs, and take the elevation of the pole ſometimes with his inſtruments. If Maſter Arthur be not well provided in this behalf, or of ſuch dexterity, that perceiving the errors he be not able to correct the ſame, I fear leſt in wandering up and down he loſe his time, and be overtaken with the ice in the midſt of the enterprize. For that gulf, as they ſay, is frozen every year very hard. Which if it be ſo, the beſt counſel I could give for their beſt ſafety were to ſeek ſome harbour in that bay, and thoſe rivers whereof I have ſpoken, and by ſome ambaſſador to make friendſhip and acquaintance with the great Can, in the name of the Queen's Majeſty, which I believe will be grateful to the mightieſt Emperor in the world, yea moſt excellent for the length of the traffic, and great diſtance of the places. I think from the mouths of the mighty rivers Bautiſus and Oechardus to Cambalu, the chiefeſt ſeat of the Prince the Can, there are not paſt three hundred German miles, and to paſs by Ezina a city of the kingdom of Tangut, which ſeemeth to be but one hundred German miles from the mouths of the ſaid rivers, and is ſubject to the great Can.

I would gladly know how high the ſea doth flow commonly in the port of Moſcovia where your men do harbour, and in other eaſterly places unto Tabin; and alſo whether the ſea in this ſtrait do flow always one way to the E. or to the W., or whether it do ebb and flow according to the manner of the tides in the middle of the channel, that is to ſay, whether it flow there ſix hours into the W. and as many back again to the E. for hereupon depend other ſpeculations of importance. I would wiſh M. Frobiſher to obſerve the ſame weſtwards. Concerning the gulf of Meroſro and Canada, and New France which are in my maps, they were taken out of a certain ſea card drawn by a certain prieſt out of the deſcription of a Frenchman, a pilot very ſkilful in thoſe parts, and preſented to the worthy Prince George of Auſtria, Biſhop of Liege: for the trending of the coaſt, and the elevation of the pole, I doubt not but they are very near the truth: for the chart had, beſide a ſcale of degrees of latitude paſſing through the midſt of it, another particularly annexed to the coaſt of New France, wherewith the error of the latitudes committed by reaſon of the variation of the compaſs might be corrected. The hiſtory of the voyage of Jacobus Onoyen Buſchoducenſis * throughout all Aſia, Africa, and the north, was lent me in time paſt by a friend of mine at Antwerp. After I had uſed it, I reſtored it again: after many years I required it again of my friend, but he had forgotten of whom he had borrowed it. The writings of Gulielmus Tripolitanus, and Joannes de Plano Carpini I never ſaw: only I found certain pieces of them in other written hand books. I am glad the epitome of Abilfada is tranſlated, I would we might have it ſhortly.

Thus much Sir, I thought good to anſwer your letters: if there be any thing elſe that you would require of me, I will moſt willingly communicate it with you, craving this likewiſe of your courteſy, that whatſoever obſervations of both theſe voyages ſhall come to your hands, you would impart them to me, they ſhall all remain with me according to your diſcretion and pleaſure, and whatſoever I gather of them, I will faithfully ſignify unto you by letters, if happily they may yield any help or light unto this moſt excellent enterprize of navigation, and moſt profitable to our Chriſtian common-

* Of Bois le Duc.

wealth.

wealth. Fare you well, moſt learned friend. At Duiſburg in Cliveland, twenty-eighth of July, the year 1580.

At Arthur his return, I pray you learn of him the things I have requeſted, and whether any where in his voyage he found the ſea freſh, or not very ſalt; for I ſuppoſe the ſea between Nova Zembla and Tabin to be freſh.

Yours wholly to my power to be commanded,

GERARD MERCATOR.

THE Diſcovery made by M. Arthur Pet, and M. Charles Jackman of the north-eaſt Parts, beyond the Iſland of Vaigatz, with two Barks; the one called the George, the other the William, in the Year 1580. Written by* HUGH SMITH.

(From HAKLUYT, Vol. I. p. 445)

UPON Monday the thirtieth of May we departed from Harwich in the afternoon, the wind being at S. and to the eaſtward. The ebb being ſpent we could not double the pole, and therefore were conſtrained to put in again until the next day in the morning, being the laſt of May; which day we weighed our anchors about three o'clock in the morning, the wind being W. S. W. The ſame day we paſſed Orfordneſs at an eaſt ſun, and Stamford at a weſt ſun, and Yarmouth at a W. N. W. ſun, and ſo to Winterton, where we did anchor all night; it was then calm, and the flood was come.

The next day being the firſt of June, we ſet ſail at three o'clock in the morning, and ſet our courſe north, the wind at the S. W. and at S. S. W.

The tenth day, about one of the clock in the afternoon, we put into Norway, to a place where one of the headlands of the ſound is called Bottel; the other headland is called Moile. There is alſo an iſland called Kene. Here I did find the pole to be elevated 62°: it doth flow there S., and it hieth ſeven or eight feet, not above.

The eleventh day in the morning the wind came to the S. and to the S. E.: the ſame day at ſix in the afternoon we ſet ſail and bare along the coaſt; it was very foul weather with rain and fog.

The twenty-ſecond day the wind being at W. we did hall the coaſt E. N. E. and E. The ſame day, at ſix in the morning, we did double the North Cape. About three in the afternoon we paſſed Skitesbeareneſs, and hald along the coaſt E. and E. S. E.; and all the ſame night we halled S. E. and S. E. by E.

The twenty-third day, about three in the morning, we came to Wardhouſe, the wind at the N. W. The cauſe of our coming in was to ſeek the William, whoſe company we loſt the 6th day of this month, and to ſend letters into England. About one of the clock in the afternoon the William alſo came into Wardhouſe to us in good ſafety, and all her company in good health.

The twenty-fourth the wind came to the E. N. E. This day the William was hald aground, becauſe ſhe was ſomewhat leaky, and to mend her ſteerage. This night, about twelve of the clock, ſhe did hale afloat again.

The twenty-fifth day the wind was at E. N. E.

* This narrative is inſerted, though ſomewhat prolix, as the voyage was of great expectation, and the navigators had the merit of making a moſt obſtinate and perſevering attempt for a north-eaſt paſſage to China.

The

The twenty-ſixth day the Toby of Harwich departed from Wardhouſe for London, Thomas Green being maſter, to whom we delivered our letters.

The twenty-ſeventh day the wind was at S. S. E. and the twenty-eighth alſo.

The twenty-ninth day, about ſix in the afternoon, the wind came to the W. N. W. for the ſpace of one hour, and preſently to the E. again, and ſo was variable all the ſame night.

The thirtieth, about ſix in the morning, the wind came to E. S. E., and continued ſo all the ſame day.

The firſt of July, about five in the afternoon, the wind was at N. N. W.; and about ſeven of the clock we ſet ſail from Wardhouſe E. and by S.

The ſecond day, about five in the morning, the wind was E. and E. S. E. and we did lie to the ſhorewards; and about ten in the morning the wind came to S. S. E. and we laid it to the eaſtwards; ſometimes we lay E. by S., ſometimes E. S. E., and ſometimes E. by N. About five in the afternoon we bare with the William, who was willing to go with Kegor, becauſe we thought her to be out of trie, and ſailed very ill, where we might mend her ſteerage; whereupon Maſter Pet, not willing to go into harbour, ſaid to Maſter Jackman, that if he thought himſelf not able to keep the ſea, he ſhould do as he thought beſt, and that he in the mean time would bear with Willoughby's land, for that it was a parcel of our direction, and would meet him at Verove Oſtrove, or Vaigats, and ſo we ſet our courſe E. N. E., the wind being at S. E.

The third day the wind at S. E. we found the pole to be elevated 70° 46′. The ſame night at twelve of the clock we ſounded, but had no ground, in 120 fathoms, being fifty leagues from the one ſide by our reckoning E. N. E. from Kegor.

The fourth day all the morning was calm. This day we found the pole to be elevated 71° 38′. This day, at nine in the afternoon, the wind at N. E. with a gentle gale, we hald along S. E. by E.

The fifth day, the wind at N. W., we hald E. and E. by S. This day we ſaw land, but we could not make it, the wind being northerly, ſo that we could not come near to it.

The ſixth day, about two in the afternoon, the wind at N. N. W. we hald E. S. E. with a fair and gentle gale. This day we met with ice. About ſix in the afternoon it became calm; we with ſail and oars laid it to the N. E. part, hoping that way to clear us of it; for that way we did ſee the head part of it, as we thought: which done, about twelve of the clock at night we gat clear of it: we did think it to be ice of the bay of St. Nicholas, but it was not, as we found afterwards.

The ſeventh day we met with more ice, at the eaſt part of the other ice: we hald along a-weather the ice to find ſome end thereof by E. N. E. This day there appeared more land north from us, being perfect land: the ice was between us and it, ſo that we could not come nearer to it.

The ſame morning, at ſix of the clock, we put into the ice to find ſome way through it; we continued in it all the ſame day, and all the night following, the wind by the N. N. W.: we were conſtrained to go many points of our compaſs, but we went moſt an eaſterly courſe.

The eighth day, the wind at N. N. W. we continued our courſe, and at five in the morning we ſounded and had ninety fathoms red oze. This day, at four in the afternoon, we ſounded again, and had eighty-four fathoms oze, as before. At ſix in the afternoon we cleared ourſelves of the ice, and hald along S. E. by S.: we ſounded again at ten o'clock at night, and had forty-three fathom ſandy oze.

The ninth day, at two in the morning, we ſounded again, and had forty-five fathoms,

then there appeared a ſhadow of land to us E. N. E.; and ſo we ran with it the ſpace of two hours, and then perceiving that it was but fog, we hald along S. E.

This day, at two in the afternoon, we ſounded, and had fifty fathoms black oze: our latitude was 70° 3′. At ten o'clock at night we ſounded again, and had fifty fathoms black oze.

The tenth day, the wind being at N. N. W., we hald E. and by N., which courſe we ſet, becauſe at ten of the clock aforenoon we did ſee land, and then we ſounded, having thirty-five fathoms black oze. All this day there was a great fog, ſo that we durſt not bear with the land to make it, and ſo we kept an outwardly courſe. This day, at ſix in the afternoon, we eſpied land, wherewith we halled, and then it grew calm: we ſounded and had 120 fathoms black oze; and then we ſent our boat a-land to ſound and prove the land. The ſame night we came with our ſhip within an iſland, where we rode all the ſame night. The ſame night we went into a bay to ride near the land for wood and water.

The eleventh day the wind came to the E. S. E. This day, about a league from us to the eaſtwards, we ſaw a very fair ſound or river that paſt very far into the country, with two or three branches, with an iſland in the midſt.

The twelfth of July the wind was E. S. E. This day, about eleven o'clock in the morning, there came a great white bear down to the water-ſide, and took the water of his own accord; we chaſed him with our boat, but for all that we could do he got to land and eſcaped from us, where we named the bay Bearbay. This day, at ſeven in the afternoon, we ſet ſail, for we had good hope that the wind would come weſterly, and with ſail and oars we gat the ſea. All the night it was calm with fog.

The thirteenth day in the morning the wind was very variable with fog, and as it cleared up we met with great ſtore of ice, which at the firſt ſhewed like land: this ice did us much trouble, and the more becauſe of the fog, which continued until the fourteenth day twelve of the clock.

The fourteenth day in the morning we were ſo imbayed with ice, that we were conſtrained to come out as we went in, which was by great good fortune, or rather by the goodneſs of God, otherwiſe it had been impoſſible; and at twelve of the clock we were clear of it, the wind being at S. and S. by W. The ſame day we found the pole to be elevated 70° 26′: we lay along the coaſt N. W., thinking it to be an iſland; but finding no end in rowing ſo long, we ſuppoſed it to be the main of Nova Zembla. About two in the afternoon we laid it to the ſouthward to double the ice, which we could not do upon that board, ſo that we caſt about again and lay W. along under the ice. About ſeven in the afternoon we got about the greateſt part thereof. About eleven o'clock at night we brought the ice S. E. of us, and thus we were rid of this trouble at this time.

The fifteenth day, about three in the morning, the wind was at S. S. W.: we caſt about and lay to the eaſtwards; the wind did weſter, ſo that we lay S. S. W. with a flawn ſheet, and ſo we ran all the ſame day. About eight in the afternoon we ſounded, and had 23 fathoms ſmall grey ſand. This night, at twelve of the clock, we ſounded again, and had 29 fathoms ſand, as afore.

The ſixteenth day unto three in the morning we hald along E. S. E., where we found eighteen fathoms red ſand, then we hald along N. E. In theſe ſoundings we had many overfals. This day, at ten of the clock, we met with more ice, which was very great, ſo that we could not tell which way to get clear of it: then the wind came to the S. S. E., ſo that we lay to the northwards: we thought that way to clear ourſelves of it, but that way we had more ice. About ſix in the afternoon the wind came to the E.; then we lay to the ſouthwards, that we had thirty fathoms black oze. This day we found the

pole

pole to be elevated 69° 40′; and this night at twelve o'clock we had forty-one fathoms red ſand.

The ſeventeenth day, at three in the morning, we had twelve fathoms. At nine we had eight and ſeven. All this day we ran S. and S. by W., at the depth aforeſaid, red ſand, being but ſhallow water. At eight in the afternoon, the wind with a ſhower and thunder came to the S. W., and then we ran E. N. E. At twelve at night it came to the S. and by E.; and all this was in the bay of Pechora.

The eighteenth day, at ſeven in the morning, we bare with the headland of the bay, where we found two iſlands: there are alſo overfals of water or tides. We went between the main and the iſland, next to the head, where we had about two fathoms and a half: we found the pole elevated 69° 13′. This day we had ſight of Vaigatz: the land of the main of Pechora did trend S. E.; we hald E. S. E. and had ten fathoms oze all the ſame day until four in the afternoon, then being calm we anchored in ten fathoms all the ſame night.

The nineteenth day, at two in the morning, we ſet ſail, and ran S. and S. S. W. all the ſame day at eight, ſeven, and ſix fathoms; this was off the S. part of Vaigatz; this part of the land lieth N. and S. This day, at four in the afternoon, we found ſhallow water, ſometimes four fathoms, ſometimes three, and two and a half, and one fathom and a half; there we anchored, and ſent our boat away to ſound, and all to leeward we had four feet, and three feet, and two feet; there was not water for the boat between Vaigatz and the other ſide: finding no more water, there was no other way but to go back as we came in, having the wind N. W.; ſo at twelve at night we ſet ſail.

The twentieth day we plied to the northwards, and got deep water again ſix and ſeven fathoms.

The twenty-firſt day, the wind by the N. W., we hald along the coaſt N. and N. N. W.; we had eight, and nine, and ten fathoms.

The twenty-ſecond day the wind came to the S. W.; we bare along the coaſt of Vaigatz, as we found it to lie N. and by W., and N. N. W., and N.; the wind blew very much with great fog: we lacking water and wood bare within an iſland, where we found great ſtore of wood and water; there were three or four goodly rounds. Under two points there was a croſs ſet up, and a man buried at the foot of it. Upon the ſaid croſs Maſter Pet did grave his name, with the date of our Lord, and likewiſe upon a ſtone at the foot of the croſs, and ſo did I alſo; to the end that if the William did chance to come thither, they might have knowledge that we had been there. At eight in the afternoon the wind came to the N. N. W., we ſet ſail and turned out of the bay. The ſame night the wind came to the W., ſo that we lay N. along the land.

The twenty-third day, at five in the morning, the wind came to the S. W.; a ſea board we ſaw a great number of fair iſlands, to the number of ſix; a ſea board of theſe iſlands there are many great overfals, as great ſtreams or tides; we hald N. E. and E. N. E. as the land did trend. At eight aforenoon the wind came to the S. E. with very much wind, rain, and fog, and very great ſtore of ice a ſea board; ſo we lay to the S. W. to attain to one of the iſlands to harbour us if the weather did ſo extremely continue, and to take in our boat, thinking it meet ſo to do, and not to tow her in ſuch weather. About twelve of the clock it became very calm upon the ſudden, and came up to the W. N. W. and N. W. by W., and then we took in our boat; and this done, there came down ſo much wind as we were not able to ſteer afore it, with corſe and bonnets of each, we hald S. with the land, for ſo the land did trend. This day all the afternoon we ſailed under a great land of ice, we ſailed between the land and it, being not able to croſs it. About twelve at night we found the ice to ſtretch into the land, that we could

not get clear to the eaſtward, ſo we laid it to the ſhore, and there we found it clear hard aboard the ſhore; and we found alſo a very fair iſland, which makes a very good harbour, and within are twelve fathoms.

This iſland is to the eaſtwards of Vaigatz four or five leagues. This land of the main doth trend S. E., and S. E. by E.: it is a very fair coaſt, and even and plain, and not full of mountains nor rocks: you have but ſhallow water of ſix or ſeven fathoms about a league from the ſhore. All this morning we halled E. S. E. This day we found the pole to be elevated 69° 14′. About twelve o'clock we were conſtrained to put into the ice to ſeek ſome way to get to the northwards of it, hoping to have ſome clear paſſage that way, but there was nothing but whole ice. About nine in the afternoon we had ſight of the William, and when we ſaw her there was a great land of ice between her and us, ſo that we could not come one to the other; but as we came near to her, we ſounded our trumpet and ſhot off two muſkets, and ſhe put out her flag upon her foretopmaſt in token that ſhe did ſee us. All this time we did ſhorten our ſails, and went with our foreſail and maintopſail, ſeeking the beſt way through the broken ice, ſhe making away the beſt that ſhe could to follow us, we put our flag to anſwer her again with the like: thus we continued all the afternoon till about twelve o'clock at night, and then we moored our ſhip to a piece of ice to tarry for the William.

The twenty-fifth day, about five in the morning, the William came to us, being both glad of our meeting. The William had her ſternpoſt broken, that the rudder did hang clean beſides the ſtern, ſo that ſhe could in no wiſe port her helm with all hands; ſhe did lighten her ſtern, and trim her head, and when we had brought her forward all that we could, we brought a cable under her ſtern, and with our capſtain did wind up her ſtern, and ſo we made it as well as the place would give us leave, and in the end we brought her to ſteer again. We acknowledge this our meeting to be a great benefit of God for our mutual comfort, and ſo gave his majeſty thanks for it. All the night after we took our reſt, being made faſt upon a piece of ice: the wind was at W. N. W., but we were ſo encloſed with ice that we could not tell which way to paſs. Winds we have had at will, but ice and fogs too much againſt our wills, if it had pleaſed the Lord God otherwiſe.

The twenty-ſixth day the wind was at W. N. W.: we ſet ſail to the northwards, to ſeek if we could find any way clear to paſs to the eaſtward; but the further we went that way, the more and thicker was the ice, ſo that we could go no further; ſo about four in the afternoon we were conſtrained to moor upon another piece of ice. I think we ſailed in all a league this day; here we had fifteen fathoms oze, and this oze is all the channel over. All the ſame day after four of the clock, and all the night we tarried there, being without all good hope, but rather in deſpair. This day Maſter Jugman did ſee land E. N. E. from us, as he did think; whether it were land or no I cannot tell well, but it was very like land, but the fogs have many times deceived us.

The twenty-ſeventh day the wind was at N. W. This day, at nine in the morning, we ſet ſail to ſeek the ſhore. Further into the ice we could not go, and at ſeven in the afternoon we moored to a piece of ice, and the William with us; here we had fourteen fathoms oze. At three in the afternoon we warped from one ice to another. At nine in the afternoon we moored again to a piece of ice until the next day. All this night it did ſnow with much wind, being at W. N. W. and at N. W. and by W.

The twenty-eighth day the wind came to the S. W. and S. S. W. This day was a very fair day. At one in the afternoon Maſter Pet and Maſter Jackman did confer together what was beſt to be done, conſidering that the winds were good for us, and we

not able to paſs for ice, they did agree to ſeek to the land again, and ſo to Vaigatz, and there to confer further. At three in the afternoon we did warp from one piece of ice to another, to get from them if it were poſſible: here were pieces of ice ſo great, that we could not ſee beyond them out of the top. Thus we warped until nine in the afternoon, and then we moored both our ſhips to a great and high piece of ice until the next morning.

The nine-and-twentieth day the wind came to the S. W., we ſet ſail at five in the morning to ply into the ſhore if it were poſſible: we made many turns among the ice to ſmall purpoſe, for with the wind doth the current run. This day by misfortune a piece of ice ſtruck off our greep afore at two aforenoon, yet for all this we turned to do our beſt. The William being incumbered with ice, and perceiving that ſhe did little good, took in all her ſails and made herſelf faſt to a piece of ice, and about four in the afternoon ſhe ſet ſail to follow us: we were afraid that ſhe had taken ſome hurt, but ſhe was well. At ſeven aforenoon we took in all our ſails to tarry for the William, and made our ſhip faſt to a piece of ice: the William before ſhe came to us took in all her ſails, and moored to another piece of ice; and thus we continued until the next morning.

The thirtieth day, the wind at S. E. and by S., and at nine in the morning we ſet ſail, and ſooner would have done if the William had been by us; but we did tarry for her, to know whether all was well with her; but as ſoon as we made ſail ſhe did the like. All this day we did our beſt to ſeek our way as the ice would give us leave; ſometimes we lay S., ſometimes W., and ſometimes E.: and thus we continued until eight at night, and then being calm, we made our ſhip faſt to a piece of ice, and went to ſupper. In the mean time the wind with a fair gentle gale came up to the E., and E. and by S.; but there came down a ſhower of rain with it, which continued the ſpace of one hour; which being done it became calm again, ſo that we could do no good all that night, but took our reſt until the next day.

The thirty-firſt, the wind being at S. W., we ſet ſail to turn to windward at three o'clock in the morning. In this turning we did little good, for the current would not give us leave; for as the wind is, ſo is the current. We did our beſt until ten of the clock, and then perceiving that we did no good, and being incloſed with ice, we made our ſhips faſt to a piece of ice. All this day the William lay ſtill, and did as much good as we that did labour all the forenoon; thus we took our reſt all the ſame day.

In the afternoon we ſet ſail, the wind being at S. and by E.; we lay to the weſtwards, as S. W., and S. W. and by S., and ſometime to the weſtward, as we might: thus we continued until nine at night, and then we could go no further for ice; ſo we with the William were conſtrained to make our ſhip faſt to a piece of ice all the ſame night. This day we found the pole elevated 69° 20′, and here we had ſeventeen fathoms oze.

The firſt day of Auguſt was very calm in the morning, the wind being at W. N. W. About twelve the wind came to the W., and continued ſo all the ſame night with great fog.

The ſecond day the wind was at S. W. all day with rain and fog. All this day we were incloſed with ice, ſo that we were forced to lie ſtill: here we had one-and-twenty fathoms oze. At ſix in the afternoon the wind was at W. with very much foul weather, and ſo continued all the ſame night.

The third day the wind was at W., and W. by N., and W. N. W. This day we lay ſtill incloſed with ice, the weather being dark with fog; thus abiding the Lord's leiſure, we continued with patience; and ſounding we found twenty-one fathoms.

The fourth day we lay ſtill incloſed with ice, the wind being at W. N. W. This ice

did every day increaſe upon us, yet putting our truſt in God, we hoped to be delivered out of it in good time.

The fifth day all the morning it rained with very much wind, being at S. S. E. About three in the afternoon we ſet ſail, and preſently it became calm for the ſpace of one hour, then the wind came to the N. N. E., and here we had thirty-three fathoms; thus we made way among the ice S. W., and S. S. W., and W., as we might find our way, for the ſpace of three hours: then we met with a whole land of ice, ſo that we could go no further; here we moored our ſhip to tarry for a further opening: here we found forty-five fathoms oze, and all the night was very dark with fog.

The ſixth day having no opening of the ice we lay ſtill, the wind being at W., and W. by S.: here we had ſixty-three fathoms oze: all the ſame night the wind was at the W. N. W.

The ſeventh day the wind was at W., and W. and by N. all day. All this day we lay ſtill being encloſed with ice that we could not ſtir, labouring only to defend the ice as it came upon us: here we had ſixty-eight fathoms oze.

The eighth day was very fair and calm but foggy. This day towards night there was little wind by the S. S. W.; then the ice began a little to open, and here we had ſeventy fathoms oze: all the night was foggy.

The ninth day the wind was at N. W. and by W.: all the afternoon we lay ſtill becauſe of the ice, which did ſtill incloſe us. This day we found the pole elevated 70° 4′, we had ſixty-three fathoms oze. This night was a very fair night, but it freezed: in the morning we had much ado to go through the ſame; and we were in doubt that if it ſhould have freezed ſo much the night following, we ſhould hardly have paſſed out of it. This night there was one ſtar that appeared to us.

The tenth day the wind was at E. N. E. with a very ſmall gale: we with ſail and oars made way through the ice. About five in the morning we ſet ſail; ſometime we lay S. W., and ſometime S., and ſometime W., as we might beſt find the way. About three in the afternoon the gale began to freſh. About ſix in the afternoon the wind was at N. E. with fog: here we had eighty-eight fathoms: we bare ſail all the ſame night, and it ſnowed very much.

The eleventh day we were much troubled with ice, and by great force we made our way through it, which we thought a thing impoſſible; but extremity doth cauſe men to do much, and in the weakneſs of man God's ſtrength moſt appeareth: this day we had ninety-five fathoms. At three in the afternoon the wind came to the S. W.; we were forced to make our ſhip faſt to a piece of ice, for we were encloſed with it, and tarried the Lord's leiſure: this night we had ninety-ſeven fathoms.

The twelfth day the wind was at the S. E., not very much, but in a manner calm. At eleven of the clock the wind came to the W. S. W.; all the day was very dark with ſnow and fog. At ſix in the afternoon we ſet ſail, the wind being at the N. N. E. All this night we bare away S. W. and S. S. W., as well and as near as the ice would give us leave. All this night we found the ice ſomewhat favourable to us more than it was before, whereupon we ſtood in good hope to get out of it.

The thirteenth day, at ſeven in the morning, the wind was at the N. E., and N. E. and by E. All this day we were much troubled with the ice, for with a blow againſt a piece of ice we brake the ſtock of our anchor, and many other great blows we had againſt the ice, that it was marvellous that the ſhip was able to abide them: the ſide of our boat was broken with our ſhip which did recoil back, the boat being betwixt a great piece of ice and the ſhip, and it periſhed the head of our rudder. This day was a very hard day with us; at night we found much broken ice; and all this night it blew very much.

much wind, ſo that we lay in drift with the ice, and our drift was S.; for the wind was at N. all this night, and we had great ſtore of ſnow.

The fourteenth day in the morning we made our ſhip faſt to a piece of ice, and let her drive with it. In the mean time we mended our boat and our ſteerage. All this day the wind continued northerly, and here we had threeſcore and two fathoms: thus we lay adrift all the ſame night.

The fifteenth day we ſet ſail at ſix in the morning, the wind being at N. E. At nine aforenoon we entered into a clear ſea without ice, whereof we were moſt glad, and not without great cauſe, and gave God the praiſe. We had nineteen fathoms water, and ran in S. W. all the morning until we came to fourteen fathoms, and thence we haled W. till we came to ten fathoms, and then we went N. W., for ſo the land doth trend. At twelve of the clock we had ſight of the land, which we might have had ſooner, but it was dark and foggy all the ſame day; for when we had ſight of the land, we were not paſſing three leagues from it. This day we had the pole elevated 69° 49′. All day we ran along the coaſt in ten and nine fathoms pepered ſand. It is a very goodly coaſt and a bold, and fair ſoundings off it, without ſands or rocks.

The ſixteenth day the wind was at E. This day we were troubled again with ice, but we made great ſhift with it, for we got between the ſhore and it. This day, at twelve of the clock, we were thwart of the S. E. part of Vaigatz, all along which part there was great ſtore of ice, ſo that we ſtood in doubt of paſſage, yet by much ado we got betwixt the ſhore and it. About ſix in the afternoon was found a great white bear upon a piece of ice. All this day in the afternoon it was dark with fog; and all the night we haled N., and N. by W., and ſometime N. and by E., for ſo doth the land trend.

The ſeventeenth day in the morning we haled W., for ſo doth the land lie: the wind was at S. E., and it was very dark with fog, and in running along the ſhore we fell aground, but God be praiſed without hurt, for we came preſently off again. The William came to an anchor to ſtay for us, and ſent ſome of their men to help us, but before they came we were under ſail; and as we came to the William we did ſtow our boats and made ſail, we went within ſome of the iſlands, and haled W. S. W.

About two of the clock in the afternoon we ſet our courſe S. W. and by S.; ſo we ran S. W. until twelve at night, the wind came to the N. N. E., and then we haled W.

The eighteenth day, at ſix in the morning, we had ſixteen fathoms red ſand; at ſix in the morning, thirteen fathoms; at ten, fourteen fathoms, and we haled W. N. W. At twelve a clock the wind came to the E., and E. by S., we haled W. and by N. all the ſame day and night. At ſix in the afternoon we had ſeventeen fathoms red ſand.

The nineteenth day the wind was at E. N. E.: at ſix in the morning we had nineteen fathoms red ſand: at twelve of the clock the wind blew N. and N. by E.; we had ſeventeen fathoms of water, at three in the afternoon fifteen.

The twentieth day wind was at N. E. and N. N. E.: at ſeven in the morning we had thirty fathoms black oze: at twelve of the clock we were upon the ſudden in ſhoal water, among great ſands, and could find no way out: by ſounding and ſeeking about we came aground, and ſo did the William, but we had no hurt, for the wind was off the ſhore, and the ſame night it was calm: all night we did our beſt, but we could not have her afloat. Theſe ſhoals do lie off Colgoyeve; it is very flat a great way off, and it doth not high above two or three feet water; it floweth N. E. and S. W.

The twenty-firſt day the wind was at S. W., and being very fair weather we did lighten our ſhips as much as was poſſible for us to do, by reaſon of the place. The ſame high water, by the help of God, we got both afloat, and the wind being at the S. W. did help us, for it cauſed it to flow the more water.

This day we found the pole to be elevated 68° 40′. In the afternoon we both ſet ſail to ſeek way to get out of theſe ſands, our boat a-head ſounding, having ſix, ſeven, and eight fathoms all within the ſand which was without us. We bare to the ſouthward, and the William bare more to the eaſtwards, and night being at hand the wind came to the S. E. whereupon we laid it to the ſouthwards, lying S. W., and S. and by W., and ran to nineteen, and twelve, and fourteen fathoms, and preſently we had but ſix fathoms, which was off the ſands' head, which we were aground upon the day before. Then we caſt about to the eaſtwards for deep water, which we preſently had, as ten, fifteen, and twenty, and ſo to twenty-three fathoms.

The twenty-ſecond day at eight in the morning, we caſt about to the ſouthward, and this day in the morning we ſaw the William under our lee as far as we could ſee her, and with a great fog we loſt the ſight of her, and ſince we have not ſeen her. Thus we ran till we came to thirty fathoms black oze, which we had at twelve of the clock, and at three in the afternoon we had twenty and three fathoms, and then we ran W. N. W. and W. by N., all the ſame night following.

The twenty-third day we had at ſix in the morning twenty-ſeven fathoms, at eight o'clock twenty-eight fathoms: at nine the wind being at E. S. E., we haled W. N. W.: this day we had ſight of the land of Hugri ſide. At twelve of the clock we had thirty-two fathoms ſand. This day we ran W. and by N., and came to five fathoms off the bay of Morzovets. Then we laid it to the northwards, ſo that we lay N. N. E. off. The wind after came to the N., and N. by E., and we lay E. and E. by N., then we laid it to the weſtward again: and thus we lay till we came to forty fathoms, and then we went N. W. till we came to fourteen fathoms, and ſo to ten fathoms. Then we caſt about to the eaſtwards and lay E., and E. by N. all the ſame night.

The twenty-fourth day at eight in the morning we had thirty-two fathoms. We ran N. W. till we came to eleven fathoms, then we lay to the northwards till twelve at night, and then we came to forty fathoms, then the wind at N. E. we lay to the weſtwards, and haled N. W. along.

The twenty-fifth at four in the morning we had thirty-ſeven fathoms, we ran N. W., the wind at N. N. E. very much.

The twenty-ſixth day we ran with the ſame wind, and found the pole to be elevated 70° 40′.

The twenty-ſeventh at ſeven in the morning we ſaw land, which we made to be Kegor, then we haled N. W. and N. by W. to double the North Cape.

The twenty-eight day at three in the morning we ran N. W., and ſo all day. At night the wind came to the S. W., and we ran N. W. all that night.

The twenty-ninth day we put into a ſound called Tane, and the town is called Hungon: we came to an anchor at five in the afternoon, at twenty-five fathoms very fair ſand. This ſound is very large and good, and the ſame night, we got water aboard.

The thirtieth day in the morning the wind at N. E., and but little, we ſet ſail, and with our boat on head we got the ſea about twelve of the clock: the wind with a fair gale came to the E. S. E., and all this day and night we ran W. N. W.

The thirty-firſt day at twelve of the clock we doubled the North Cape, the wind being at E. S. E., we haled W. all the ſame day, and at night we ran W. S. W.

The firſt day of September the wind was at N. E. with very much fog: all this day we ran W. S. W.: at two in the afternoon the wind came N.

The ſecond day at three in the morning we doubled Fowlneſſe, and the wind was this day variable at all parts of the compaſs. In the afternoon we made but little way:

at

at ſix o'clock the wind came to the S. W., and we went N. W. At nine in the night there came down ſo much wind by the W. S. W., that we were fain to lay it a hull, we haled it to northwards for the ſpace of two hours, and then we laid her head to the ſouthwards, and at the break of day we ſaw land, which is very high, and is called by the men of the country Fouleneſſe. It is within full of ſmall iſlands, and without full of rocks very far out, and within the rocks you have fair ſand at twenty fathoms.

The third day in the morning we bare with the ſound aforeſaid: within it is but ſhoal water, four, five and three fathoms, ſandy ground, the land is very high, and the church that is ſeen is called Helike Kirke. It doth high here not above eight or nine feet.

The twelfth day at three in the afternoon, we put into a ſound by Lowfoot, where it doth flow S. W. and by S. and doth high ſeven or eight feet water.

The thirteenth day much wind at W.: we had a ledge of rocks in the wind of us, but the road was reaſonable good for all ſoutherly and weſterly winds. We had the main land in the wind of us: this day was ſtormy with rain.

The twenty-third day at four of the clock in the afternoon we put into Norway, into a ſound called Romeſal, where it floweth S. S. E., and doth high eight feet water. This place is full of low iſlands, and many good ſounds without the high mountain land. Here is great ſtore of wood growing, as fir, birch, oak, and hazel: all this night the wind was at the S. very much wind with rain and fog.

The twenty-eight day in the morning the wind being at E. N. E. we ſet ſail at eight of the clock, and haled out of the bay W. S. W. and S. W., having a goodly gale until one of the clock, and then the wind came to S. E. and to the S. with rain and fog, and very much wind: at ſix of the clock we came into a very good road, where we did ride all the ſame night in good ſafety.

The twenty-ninth day we put into a good ſound, the wind being by the S. W.: at three in the afternoon there came down very much wind by the S., and all night with vehement blaſts, and rain.

The thirtieth day all day the wind was at W. S. W. And in this ſound the pole is elevated 63° 10′.

The firſt day of October the wind was at S. with very much wind, and vehement blaſts.

The ſeventh day we ſet ſail: for from the firſt of this month until this ſeventh day, we had very foul weather, but ſpecially the fourth day when the wind was ſo great, that our cables brake with the very ſtorm, and I do not think that it is poſſible that any more wind than that was ſhould blow: for after the breaking of our cable, we did drive a league, before our anchors would take any hold: but God be thanked the ſtorm began to ſlack, otherwiſe we had been in ill caſe.

The ſeventh day at night we came to an anchor until the next day, which was the eight day of the month, when as the wind grew great again with rain, whereupon we ſet ſail and returned into the ſound again: and at our firſt coming to an anchor, preſently there blew ſo much wind, that although our beſt anchor was out, yet the extremity of the ſtorm drove us upon a ledge of rocks, and did bruiſe our ſhip in ſuch ſort, that we were conſtrained to lighten her to ſave her, and by this means (by the help of God) we got off our ſhip and ſtopped our leaks, and moored her in good ſafety abiding for a wind. We rid from this day by reaſon of contrary winds, with fog and rain, until the twenty-fourth day, which day in the morning the wind came to the N. E., and at eight of the clock we ſet ſail. This ſound is called Moore Sound, where it hieth about five feet water, and floweth S. S. E. The next day being the twenty-fifth day we put

into

into a ſound which is called Ultar Sound, where was a ſhip of the king of Denmark put into another ſound thereby, being two leagues to the ſouthwards of us, that came out of Iceland: the wind was contrary for us at S. S. W.

The twelfth day of November we ſet ſail, the wind being at the E. S. E. and paſſed through the ſound where the King's ſhip did lie: which ſound is called Sloure Sound. But as we did open the ſound, we found the wind at the S. W., ſo that we could do no good, ſo that we moored our ſhip between two iſlands, until the eighteenth day, and then the weather being fair and calm, we ſet ſail, and went to ſea hoping to find a fair wind, but in the ſea we found the wind at the S. W., and S. S. W., ſo that we were conſtrained to return into the ſame ſound.

The next day being the ninteenth the King's ſhip came out alſo, becauſe ſhe ſaw us put to ſea, and came as far out as we, and moored where we did moor afore: and at our return back again, we moored our ſhip in an outer ſound called Scorpe Sound, becauſe the King's ſhip was without victuals, and we did not greatly deſire her company, although they deſired ours. In this ſound the pole is elevated 62° 47′. Thus we lay ſtill for a wind until the firſt of December, which day we ſet ſail at ſix o'clock in the morning, and at four in the afternoon we laid it to the inwards.

The ninth day we had ſight of the coaſt of Scotland which was Buchanneſs.

The tenth day we were open off the Frith.

The eleventh day at four in the morning we were thwart of Barwike: at ſix we were thwart of Bamburch: the ſame day at ten at night we were ſhot as far as Hollyfoote. Then the wind came to the S. and S. E., ſo that we lay ſtill until the next day in the morning, and then we were conſtrained to put with Tinmouth. The ſame day at night we haled aground to ſtop a leak, which we found to be in the ſkarf afore. The wind continued by the S. E. and S. S. E. until the twentieth day, and then we ſet ſail about twelve at night, bearing along the coaſt.

The twenty-ſecond day by reaſon of a S. E. wind, we thought we ſhould have been put into Humber, but the wind came to the W., ſo that we haled S. E: and at three in the afternoon we haled a ſea board the ſands, and had ſhoal water off Lymery and Owry, and were in four fathoms off them. The next day we haled as we might to ſeaſe Orfordneſſe.

The twenty-fourth day we came thwart of the Naſe, about eight in the morning.

The twenty-fifth day, being the nativity of Chriſt, we came to an anchor between Oldhaven and Tilbury hope. The ſame day we turned as high as Porſhet.

The twenty-ſixth day we turned as high as Ratcliffe, and praiſed God for our ſafe return. And thus I end, 1580.

The William with Charles Jackman arrived at a port in Norway, between Trondem and Roſtock in October 1580, and there did winter: and from thence departed again in February following, and went in company of a ſhip of the king of Denmark toward Iceland: and ſince that time he was never heard of.

THE

THE FIRST VOYAGE OF THE DUTCH AND ZEALANDERS BY THE NORTH, ALONG THE COASTS OF NORWAY, MOSCOVY, AND TARTARY, IN ORDER TO SEEK A PASSAGE TO THE KINGDOMS OF CATHAY AND CHINA.

[Newly tranſlated from the *Recueil des Voyages qui ont ſervi à l'etabliſſement et aux progrez de la Compagnie des Indes Orientales.* Tom. I. p. 55.]

THE ancients who poſſeſſed a great taſte for the wonderful, have not failed to intermix it with the foundations of empires, and the eſtabliſhments of ſtates and of almoſt all ſocieties. At preſent that the world is become more rational, nothing on theſe occaſions is recited but of the moſt ordinary deſcription. We even ſometimes find ourſelves ſurpriſed, and in ſome meaſure diſpleaſed, at reading the feeble commencement of a great intrigue, ſo little correſponding with the concluſion, and the ideas it has inſpired. We feel inclined to call in queſtion the veracity of thoſe, who diſcloſe to us the motives and the ſimple means by which the greateſt events have been produced.

The empire founded by the Dutch in the Eaſt Indies, is not one of the leaſt brilliant ornaments which adorn the hiſtory of the ſeventeenth century. It is at the ſame time one of thoſe aſtoniſhing events, which have not been in the leaſt foreſeen when the firſt ſteps were made which gave them birth, and as nothing was farther from the views of thoſe who were the cauſe in producing this great effect, perhaps there alſo has never been ſo illuſtrious a foundation, produced almoſt by accident, and with ſo little deſign and power.

Athough this firſt relation, which is placed at the head of this volume, only preſents the failure of a deſign, it is nevertheleſs certain that the navigation it deſcribes, was the firſt inſtigation given to the United Provinces to go in queſt of thoſe rich regions of which they have ſince acquired the poſſeſſion. Some merchants animated with a deſire of making trade flouriſh, ſubmitted propoſitions to the States, and obtained a permiſſion, the conſequences of which have been the ſources of all the glory and proſperity of their native country.

At the head of the ſociety which undertook this enterpriſe, was Balthaſar Moucheron of Zealand. He requeſted of the States General and Prince Maurice, High Admiral, the liberty of ſeeking a northern paſſage to the kingdoms of Cathay and China: which was granted.

Three veſſels were immediately equipped by the ſociety, one at Amſterdam, another at Zealand, and the third at Enchuiſen. Theſe veſſels ſet ſail in the year 1594, to paſs around if poſſible by Norway, Moſcovy, and Tartary, and proceed to China.

The veſſel equipped at Amſterdam had for chief-pilot William Barentſz, of the town of Schelling, a very ſkilful mariner. He took with him a fiſherman of the ſame town, with his bark, to keep him company, in caſe the other two veſſels ſhould be ſeparated from him.

Theſe veſſels having departed from the Texel on the fifth of June, arrived on the twenty-third of the ſame month, at the iſland of Kilduin in Moſcovy.

During the night of the fourth of July, Barentſz obſerved the altitude, the ſun being at the loweſt point, that is to ſay N. E. half E. and he found he was in the latitude of 73° 25'.* They then ſailed five or ſix leagues from the land under Novaya Zemlia, and having again obſerved the altitude, they bore to the eaſt.

* It appears at the concluſion of this journal that Barentſz was ſeparated from the other two veſſels, and as they all joined in latitude 69°, it is very probable they were ſeparated at leaving Kilduin; ſo that hereafter the navigation alone of the veſſel of Barentſz with the bark of the fiſherman is inquired into.

When they had run five or ſix leagues in the ſame courſe, they found themſelves near a point of land ſufficiently low, but extending a conſiderable diſtance into the ſea, which they called Langenes. To the eaſt of this point there was a great bay, by which they ſent the ſhallop to ſhore, where no perſon was obſerved. They afterwards remarked two creeks between the cape of Baxo, which is four leagues from Langenes, and the weſtern point of the bay of Loms, which is capacious and extenſive. To the weſt they found a good haven, where are ſix, ſeven, and eight fathoms of water. Here the ſhallop approached the land, and they formed a buoy of an old maſt which they found.

This bay they called the bay of Loms, on account of a ſpecies of birds ſeen in great quantity, which were very heavy, *Lom* in the Dutch language ſignifying heavy. In effect the bodies of theſe birds appeared ſo large in proportion to their wings, which were very ſmall, that they were ſurpriſed at their being able to lift ſuch heavy maſſes. They make their neſts on ſteep mountains, in order to be ſecure from the beaſts, and they only lay one egg at a time. They are not ſcared at the ſight of men: one may even be taken in its neſt without occaſioning the others near it to fly away or quit their ſtations.

From the bay of Loms, they ſailed towards Admiralty Iſle, the weſtern ſide of which is not clear, having little depth even at a conſiderable diſtance from the ſhore: ſo that it is neceſſary to keep off the coaſt, and not to approach but with great precaution. The depth is even very unequal, and when at one ſounding ten fathoms have been found, ſometimes but ſix are found at another, and immediately afterwards they again find ten, eleven, and twelve.

The ſixth of July, at midnight, they arrived at the *Swarthock*, or the Black Cape, lying in latitude 75° 29′ and afterwards at William's Iſle at the diſtance of eight leagues, in the latitude of 75° 55′.

They found at this place a great quantity of wood which had been brought by the ſea, and Walruſſes, or ſea cows, marine monſters of wonderful ſtrength, larger than oxen, and having a rougher hide than the marine dog, with very ſhort hair. Their muzzle reſembles that of the lion They almoſt conſtantly abide on the ice, and are difficult to kill, unleſs the blow be given exactly on the ſide of the head. They have four feet and no ears.

They only bring forth one or two young ones at a time, and when met by the fiſhermen on the ice, they throw their young ones before them into the water, and taking them between their fore legs as between the arms, they plunge with them and re-appear at different times, and when they would revenge themſelves and attack the barks, or defend themſelves they again caſt away their young, and approach the bark with extreme fury. They have two teeth on each ſide of the mouth, nearly fourteen inches long, which are as much eſteemed as the teeth of the elephant, eſpecially in Moſcovy, Tartary, and the other parts where they are uſed, becauſe they are neither leſs white, leſs hard, nor leſs ſmooth than ivory. The hair of the beard reſembles little horns, and is almoſt ſimiliar to thoſe of the porcupine. Two were ſeen in 1612, at Amſterdam and other cities of Holland: one of them was old and dead, the other was young and ſtill alive. The Engliſh call them ſea-horſes, and the French ſea-cows: but among the Ruſſians who have been acquainted with theſe animals from time immemorial they have the name of Morſes.

On the ninth of July, they anchored in Berenfort road, under William's Iſle, where having ſeen a white bear, they got into the ſhallop and wounded it with bullets. But the bear finding itſelf wounded, redoubled its fury, and exhibited marks of the greateſt

vigour we have ever heard of, riſing and appearing again from the bottom, where he had plunged to ſwim anew. The perſons in the ſhallop, directed it towards the animal, and paſſed a cord round its neck with a running knot, thinking to take it alive and carry it to Holland; nevertheleſs they were very content at ſeeing it die, and having only the ſkin; for it cried ſo horribly, ſtruggled in ſuch a manner, and made ſuch prodigious efforts, that thoſe who have never ſeen it, would not be able to imagine any thing ſimilar.

After having thus tormented it they gave it a little relaxation, by not drawing the nooze tight; but they always dragged it after them in order to fatigue it the more. Barentſz having cauſed it to be brought near, and touched it with his hand, the bear darted with vigour towards the ſhallop, put its two paws on the ſtern, and exerted itſelf in ſuch a manner that it entered with half its body. The crew were ſo alarmed, that they all fled to the poop, and no one expected to eſcape alive.

The adventure which delivered them from this peril was very ſingular. The nooze got entangled with the iron work of the rudder, and ſtopped the bear. When they ſaw it thus checked, the moſt courageous of the ſailors advanced with a demi-lance, and gave it ſo violent a blow that the animal fell into the water. The ſhallop which then approached the veſſel with all poſſible ſpeed, dragged the bear after it, and ſo exhauſted its ſtrength, that ſeeing it leſs agitated than before, they were enabled to kill it, and its ſkin was brought to Amſterdam.

On the tenth of July they obſerved the Iſle of Croſſes, which they thus named on account of two great croſſes which they ſaw there. They anchored at the diſtance of two long leagues from the ſhore, and having landed in the iſland they found it barren and full of rocks, being half a league in extent from Eaſt to Weſt, and having at each extremity a chain of rocks under water.

Eight leagues thence is Cape Naſſau, in the latitude of 76° 30′. It is a low and level point which muſt be carefully avoided becauſe there is a bank of ſeven fathoms, at a great diſtance from the ſhore. From this cape they ſailed five leagues to the E. and by S. and to the E. S. E., and then thought they ſaw land to the N. E. and by E. They immediately ſteered in that direction, conceiving this to be a new land, to the North of Novaya Zemlia. But the wind increaſing they were obliged to furl all the ſails; and the ſea afterwards became ſo troubled that they ſailed for more than ſixteen hours under bare poles.

The day following they loſt their little bark by a wave which ſunk it, and after being thus driven about for a conſiderable time under bare poles, they found themſelves at three in the afternoon under Novaya Zemlia, cloſe to the land.

On the thirteenth of July a great quantity of ice was obſerved from the top-maſt. On the fourteenth they found themſelves in the latitude of 77° 45′ near a ſurface of ice perfectly ſmooth, extending as far as the eye could reach. On the morning of the nineteenth they returned to the coaſt of Novaya Zemlia, near Cape Naſſau, and on the twenty-ſixth they were at Cape Trooſt.

On the twentieth they arrived in latitude 77° and the moſt northern point of Novaya Zemlia, called *Ys-hoek*, or Icy Cape, bore due E. Here they found ſome little ſtones ſhining like gold; for which reaſon the called them golden ſtones.

On the thirty-firſt of July, having tacked between the ice and the land, during fine weather, they arrived at the Orange Iſles, near one of which they met with upwards of two hundred ſea cows, on the ſand baſking in the ſun. The crew thinking theſe amphibious animals were not able to defend themſelves on ſhore, went to attack them to obtain their teeth: but their fury broke the hatchets, ſabres, and pikes, without

their being able to kill a ſingle one, or to obtain any other advantage than that of ſeizing one of their teeth which was broken

This ill ſucceſs did not diſcourage the ſailors. They reſolved to return on board and to bring guns; which they were not able to accompliſh on account of the violence of the wind, which became very impetuous, ſeparating the ice in large flakes.

At the ſame time they found a large white bear aſleep, and firing upon him they wounded him. Notwithſtanding this he ran away, and threw himſelf into the water, where they followed him, ſteering the ſhallop after him. He was killed, and dragged on the ice, upon which he was ſtabbed with a demi-lance, in order to return and take him, if the wind which continued ſtrengthening, and the ice which was ſtill breaking into flakes had not preſented an inſurmountable obſtacle.

After theſe adventures, and this navigation to the Orange Iſles, William Barentſz perceived that it was not in his power to advance further, nor to diſcover more diſtant countries. The crew themſelves began to appear fatigued, and little diſpoſed to continue the voyage. He reſolved therefore to return, in order to rejoin the other two veſſels which had directed their courſe towards the Weygats or ſtrait of Naſſau, in order to learn what diſcoveries they had made.

On the firſt of Auguſt they reſumed the ſame route by which they had come, and having doubled the Capes of Trooſt and Naſſau, and ſeveral others, they arrived on the eighth at a very low and ſmall iſle, lying at the diſtance of half a league from the main land, and which they called Black Iſland on account of its ſurface having a black appearance. Barentſz having obſerved the altitude here, found the iſland to lie in latitude 71° 45′. There was a large creek, and the pilot was of opinion that it was in that place Oliver Beunel had formerly been: and that conſequently the iſland ſhould be called Conſtintſarch.

At the diſtance of three leagues from this iſle, they diſcovered beſides another little point, upon which there was a croſs. They afterwards ranged the coaſt for four leagues, and doubled another little point, behind which was a great creek, and they named it the Fifth Cape, or the Cape of St. Laurence.

Baſtion Cape is alſo three leagues diſtant from this latter. There is a black rock quite cloſe to the ſhore, upon which was ſeen a croſs. Some ſailors having landed were certain there had been men who had fled at their coming: for they found ſix ſacks of rye flour buried, and a heap of ſtones about the croſs.

Within gun ſhot of this latter place, there was another croſs, with three houſes conſtructed of wood, after the northern faſhion, where they ſaw ſeveral barrel ſtaves; which induced them to think it probable there might be a ſalmon fiſhery at that place. There were alſo five or ſix coffins on the ground, near as many ditches, and they were all filled with ſtones.

The haven is very good, and ſheltered from every wind. They named it Flour Port, on account of the flour which they had found. Betwixt this port and Cape Baſtion, is the bay of St. Laurence, alſo very good, and ſheltered from the N. E. and N. W. winds. They obſerved the altitude in Flour Port and found themſelves in latitude 70° 45′.

On the twelfth of Auguſt, two ſmall iſlands were diſcovered, the latter of which was only a league from the land, which they named St. Clara. On the fifteenth, at three in the afternoon, Barentſz having obſerved the altitude found himſelf in latitude 69° 15′. They ſailed two leagues more to the eaſt and obſerved the iſles of Matſloe and Delgoi, where the veſſel in the morning rejoined thoſe of Zealand and Enchuiſen, which had alſo arrived the ſame day from the ſtrait of Naſſau.

They imagined at firſt that Barentſz had ſailed round Novaya Zemlia, and had alſo returned by the ſame ſtrait. At their junction the ordinary ſalutations paſſed, and they afterwards recounted to each other their navigation and the diſcoveries they had made.

After this they ſailed together to Holland. Barentſz arrived at Amſterdam on the ſixteenth of September with the yacht he had conducted, and a ſea-cow of prodigious ſize which had been killed on a bank of ice.

SECOND VOYAGE OF THE DUTCH AND ZEALANDERS, BY THE NORTH, ALONG THE COASTS OF NORWAY, MOSCOVY, AND TARTARY, IN ORDER TO REACH CATHAY AND CHINA.

THESE veſſels having returned in the autumn, reported that there were hopes of finding a paſſage by the ſtrait of Naſſau. The crews of the veſſels of Zealand and Enchuiſen were of this opinion, which was ſtrongly ſupported by John Hugues of Linſchooten, who had performed the voyage in quality of ſteward.

This opinion induced the States General and the Prince of Orange again to equip ſome veſſels for the following ſpring, not only in order to make diſcoveries, and as it were found the paſſage, as they had already done, but they were alſo to carry merchandiſe. The merchants had the liberty of ſending what goods they pleaſed, with perſons to negociate for them in the places they ſhould land; and they were exempted from the taxes on exports, and all cuſtom-houſe duties.

Peter Plancius, the celebrated coſmographer, was one of thoſe entruſted with the care and conduct of this ſecond voyage. It was he who preſcribed the route, and who indicated the ſituations of Tartary, Cathay, and China. But to the preſent day we have not been enabled to judge whether he was accurate or not, ſince the three voyages which have been undertaken to proceed by the north to thoſe countries have failed of ſucceſs, and the routes preſcribed by him were not followed. Many accidents occurred, and there were inconveniences which the ſhortneſs of the time would not permit to remedy.

Seven veſſels were therefore equipped, in 1595, by order of the States General and the Prince of Orange, in order to paſs by the Weigats, and ſail towards Cathay and China. There were two from Amſterdam, two from Zealand, two from Enchuiſen, and one from Rotterdam: ſix were laden with all ſorts of merchandiſe, and with money, and merchants were appointed to negociate them.

The ſeventh, which was a yacht, received orders to return with tidings of the ſix others, when they ſhould have doubled Cape Tabin, which they conceived to be the fartheſt point of Tartary, or at leaſt when they ſhould be ſo far advanced that they might direct their courſe toward the ſouth, and have nothing more to dread from the ice.

The ſame William Barentſz was again commander and pilot of the largeſt of the two veſſels from Amſterdam; and James Heemſkerk, who was appointed ſteward, is that Heemſkerk who twelve years after, that is to ſay, in 1607, acquired ſo great a reputation in a celebrated naval combat which took place in the bay and under the cannon of the fortreſs of Gibraltar. Gerard de Veer alſo embarked in the ſame veſſel; and it is from his journal that the preſent relation is publiſhed.

They left the Texel on the ſecond of June 1595 at ſun-riſe, and on the fourteenth were in ſight of Norway. On the twenty-ſecond, at three in the afternoon, they ſaw by the head of the ſhip a large whale aſleep: it awoke at the noiſe of the ſhip's way and the ſhouts

ſhouts of the crew, and thus eſcaped, otherwiſe the veſſel would inevitably have paſſed over it.

On the fourth of Auguſt the vice-admiral, who was a little way before, ſtruck on a rock; but the weather was ſo favourable that he relieved himſelf without difficulty. The accident of this veſſel was a warning to the others to avoid the ſame rock. On the ſixth the ſame veſſel of the Vice-admiral and that of Barentſz ran foul of each other, and were much damaged. On the ſeventh they fell in with a veſſel from Enchuiſen, coming from the White Sea.

On the fourteenth the altitude was taken, and they found themſelves in lat. 70° 47'. On the eighteenth they obſerved two iſlands, to which the veſſels from Enchuiſen gave the names of Prince Maurice, and Count Frederic his brother. On the ſame day, at ſix in the evening, they diſcovered Naſſau Strait, which bore five leagues E. N. E.

From the latitude of 70° to the ſtrait, they conſtantly ſailed through fragments of ice; but the channel, which is ſituated exactly between the cape of Idols and the land of the Samoiedes, was ſo full that it ſeemed impoſſible to penetrate there: they therefore determined to enter the bay, which they named Train Bay, becauſe they there found a great quantity of train oil. This bay is ſafe; a ſhip is there protected from the banks of ice, and from almoſt every wind, and it may be entered to any diſtance in five, four, and three fathoms of water, on a ſound bottom; but it is deeper on the eaſtern ſide.

On the twenty-firſt of Auguſt fifty perſons landed in order to reconnoitre the country. When they had proceeded two leagues, they found ſeveral ſledges laden with furs, train oil, and other ſuch merchandiſe: they alſo found traces of men and rein-deer, and they were of opinion that there were men dwelling at no great diſtance, or at leaſt that they frequented the place; beſides, the idols which they obſerved on the cape farther confirmed them in this idea.

Penetrating afterwards farther into the country, they were in hopes of meeting at laſt with houſes and men, who might inform them of the ſtate of the ſea, and the navigation in thoſe parts; but notwithſtanding their pains and care they diſcovered neither the one nor the other.

In the mean time ſome of them advancing to the S. E., towards the ſhore, diſcovered a practicable path in the marſhes; for on entering into the water up to the middle of the leg they found a ſound bottom, and in other places leſs deep, the water was only above the ſhoe.

When they had arrived at the ſea ſhore they began to rejoice, imagining they had diſcovered a paſſage, for they ſaw ſo little ice that they were in hopes of being able to pierce through; they therefore returned in the evening on board and communicated this intelligence: the maſter had alſo ſent a yacht with oars to obſerve if the ſea of Tartary was open. The veſſel not being able to enter that ſea on account of the ice, repaired to Cape Croſs, where the crew left it, and proceeded by land to *Twiſt-hoek*, or Cape Diſpute; there they perceived that the ice of the ſea of Tartary was in great quantities along the coaſt of Ruſſia, and the point of Weigats.

On the twenty-third day of the ſame month of Auguſt they fell in with a bark from Pitzora, conſtructed of the barks of trees ſewed together, and which was diſpatched to the north to ſeek for the teeth of ſea-cows, train-oil, and geeſe, in order to lade ſome Ruſſian veſſels which were to come by the Weigats.

On being ſpoken to, they anſwered, that thoſe veſſels were to come round by the ſea of Tartary, and paſs beyond the river Obi, to go to winter at Ugolita, a place in Tartary, as they were accuſtomed to do every year: they alſo ſaid that the outlet from the ſtrait would not be completely cloſed up before two months or two months and a half;

but

but that then it would be poſſible to proceed to Tartary on the ice, by the ſea which they named the ſea of Marmora.

On the twenty-fifth of Auguſt the Dutch returned to the bark, where they were received by the Ruſſians with marks of friendſhip, which they did not fail to return. The Ruſſians who had a great many fat geeſe, made them a preſent of eight; and the Dutch having entreated that ſome of their company would go to their ſhip, ſeven followed them.

When they were arrived, they teſtified their ſurpriſe and admiration at the ſight of ſo large a veſſel, and conſidering the manner and order with which it was equipped, they examined it with curioſity on all ſides: they were afterwards preſented with meat, butter, and cheeſe, which they would not taſte becauſe it was a faſt day with them; but they ate voraciouſly of pickled herring, ſwallowing it whole with the head and tail. They alſo made them a preſent of a trough full, for which they ſhewed much gratitude; they then carried them back with the yacht to Trane Bay.

On the thirty-firſt of Auguſt Barentſz ſailed along the northern coaſt of Weigats, where they found ſome of thoſe men called Samoiedes, and which are regarded as ſavages, though they are not abſolutely ſo; for the Dutch having penetrated a league into the country, and having met with twenty of them, had ſome communication. It is true there was ſo great a miſt that they did not perceive the Dutch; and when the latter diſcovered them they were already very near, and beheld them in two companies.

The interpreter being detached, and having advanced in order to ſpeak to them, one of the Samoiedes alſo advanced, and approaching he drew an arrow from his quiver, threatening to kill the interpreter. The latter having no arms was much alarmed, and cried out in the Ruſſian language, *Do not ſhoot, we are friends.* The Samoiede immediately laid down his bow and arrow, and ſignified that he was willing to diſcourſe. The interpreter having ſaid a ſecond time, *We are friends: Well*, ſaid he, *then you are welcome;* and afterwards they ſaluted each other, by inclining the head to the ground, after the Ruſſian manner.

The interpreter having aſked ſome queſtions concerning the ſtate and ſituation of the country and ſea which they obſerved on the eaſt, after ſailing through the ſtraits of the Weigats; he anſwered, that when they ſhould have paſſed a point which was at the diſtance of about five days journey, and which he indicated to lie to the N. E., they would meet with a great ſea to the S. E.; adding that he was particularly acquainted with that, one of his companions having been ſent there from their king with troops under his command.

The Samoiedes are clothed in the manner in which ſavages are repreſented; and in this particular they may be called ſavages: but on no other account do they merit the appellation, for they exhibit a conſiderable portion of good ſenſe in their behaviour.

Their clothing conſiſts of ſkins of rein-deer, covering them from head to foot, the chiefs excepted, who cover the head with ſome coloured pieces lined with fur; the others have caps of rein-deer ſkin, the hair being on the outſide, ſitting very cloſe about the head. They wear the hair long, tied in a ſingle treſs, and hanging down their back over their garments.

They are of ſmall ſtature, with broad and flat faces, ſmall eyes, ſhort legs, with the knees bending out; they run ſwiftly, and leap very well: they place little confidence in other nations, of which the following are proofs.

Though the Dutch had teſtified much confidence and friendſhip in this firſt interview, yet having returned, on the firſt of September, a ſecond time to land, and requeſted to examine one of their bows, they refuſed and appeared diſpleaſed.

The

The king had guards who went every where, and carefully watched what happened, particularly obſerving the ſales and the purchaſers. One of the Dutch having approached a little nearer to him than the others, and having ſaluted him after the manner of the country, preſented him with ſome biſcuit, which the king took with much civility, and immediately began to eat it; but while eating, he looked around and attentively obſerved what they were doing.

Their ſledges are always ready, and are drawn by a rein-deer or two, which run ſo ſwiftly, that they carry a man or two with greater celerity than horſes could do.

One of the Dutch having fired his gun towards the ſea, they were ſo terrified that they ran and jumped like madmen: they were pacified, however, when they underſtood no harm was intended to them. The Dutch gave them to underſtand that thoſe were the arms they uſed inſtead of bows.

But in order to make them underſtand the power and uſe of this kind of arms, one of the Dutch took a flat ſtone, as large as the half of the palm of the hand, and placed it at a diſtance on an eminence. The Samoiedes, who comprehended by the ſigns which were made that he was about to perform ſomething ſingular, aſſembled to the number of about fifty or ſixty, and placed themſelves near the ſtone: the Hollander fired and having hit the mark, the ſtone was broken to pieces, at which the ſpectators evinced a great aſtoniſhment.

At length they parted with ſigns of amity on both ſides, and when the Dutch were in their yacht, they once more took off their caps and ſounded the trumpets; to which the Samoiedes having anſwered in their manner, they returned to their ſledges and ſeated themſelves.

A little time afterwards they ſaw one of them return to the ſhore to reclaim a ſtatue of very rude carving which one of the Dutch had carried away. He came on board the yacht, and having ſeen the ſtatue, ſignified to them that they had been guilty of a very bad action in taking it away. They returned it to him, and it was firſt placed on an eminence near the ſhore, from which it was afterwards carried away in a ſledge.

It would appear from this and many other occaſions that theſe ſtatues are the gods of the Samoiedes. Near a hundred were alſo found on the point of Weigats, which had been named the Cape of Idols, not better finiſhed than the other: they were a little rounded at the top, and in the middle was a ſmall elevation ſerving for a noſe, with two little holes above for the eyes, and another under the noſe for the mouth. A quantity of aſhes and bones of rein-deer were obſerved before them, which ſhewed that the Samoiedes had offered ſacrifices to them.

The Dutch having ſet ſail on the ſecond of September, two hours before ſun-riſe, found themſelves at ſun-ſet at the diſtance of a league from Twiſthoek, to the eaſt of that cape; and ſailing north till noon, performed about ſix leagues of their courſe. They afterwards met with ſo much ice, the wind was ſo changeable, and there aroſe ſo thick a fog, that they were under the neceſſity of making ſhort tacks; and at length they drifted to the eaſt of the Iſle of the States, within muſket-ſhot of the land.

They landed on the iſland where they met with a great quantity of hares, many of which they killed. On the ſixth of September ſome ſailors again landed to ſeek for a certain ſort of ſtone, a ſpecies of diamond, of which a ſufficient quantity is alſo found in the Iſle of the States. During this ſearch two of the ſailors ſleeping by one another, a white bear very lean approached them ſoftly, and ſeized one by the nape of the neck. The ſailor not knowing what it was, cried out, Who has ſeized me thus behind? His companion having raiſed his head ſaid, Holloa! my dear friend, it is a bear; and immediately riſing ran away. The bear bit the unfortunate man in ſeveral parts of the head, and

and having quite mangled it, ſucked the blood. The reſt of the perſons who were on ſhore, to the number of twenty, immediately ran with their firelocks and pikes, and found the bear devouring the body, which on ſeeing them ran towards them with incredible fury, threw himſelf upon one of them, carried him away, and tore him to pieces, which ſo terrified them that they all fled.

Thoſe who remained in the veſſel and the yacht ſeeing them thus flee, and return towards the ſhore, jumped into the boats and rowed with all their force to receive them. When they had landed and beheld this lamentable ſpectacle, they encouraged the others to return with them to the combat, that altogether might attack this ferocious animal; but there were ſome who could not be induced to it. Our companions are dead, ſaid they, we cannot preſerve their lives; if we could ſtill have this hope, we would go with as much ardour as you to deliver them: but there is nothing to be aſpired at, but a victory from which will accrue neither honour nor advantage, and for which we muſt expoſe ourſelves to a frightful danger. We can either kill or take the bear, and probably this will happen, but it will coſt the life of one of us; and the glory of the capture or death of this animal ought not to be fought at this price.

Notwithſtanding theſe reaſons three of them advanced a little, while the bear continued to devour his prey, without diſturbing himſelf at the ſight of thirty men together ſo near him. Theſe three were Cornelius Jacobs pilot, and Hans Van Uffelen, purſer of the veſſel of Barentſz, and William Gyſen, pilot of the yacht.

The two pilots having fired three times without hitting the animal, the purſer advanced a little farther and ſhot the bear in the head cloſe by the eye, which did not cauſe him to quit his prey; but holding the body always by the neck which he was devouring, carried it away as yet quite entire. Nevertheleſs they then perceived that he began himſelf to totter, and the purſer going towards him with a Scotchman, they gave him ſeveral ſabre wounds, and cut him to pieces, without his abandoning his prey. At length the pilot Gyſen having given him a violent blow with the butt end of his firelock on the muzzle, which brought him to the ground, the purſer leaped upon him and cut his throat. The two bodies half-devoured were interred in the Iſle of the States, and the ſkin of the bear was carried to Amſterdam.

On the ninth of September they again ſet ſail, but they met with ſo great a quantity of ice banks, which ſtruck againſt the veſſel, that they were not able to paſs, and were under the neceſſity of returning in the evening and anchoring in the ſame place from which they had ſet ſail. The admiral and the yacht of Rotterdam touched on the rocks, which however did them no damage.

On the eleventh of the ſame month all the veſſels again ſailed towards the ſea of Tartary without being able to advance farther than before, on account of the ice: thus they returned to the Weigats, and ſteered towards the Cape of the Croſſes. On the fourteenth the weather became a little finer, the wind veered to the N. W. and the currents ſet in with rapidity from the ſea of Tartary.

On the ſame day they croſſed over from the other ſide of the Weigats to the main land, in order to ſound the channel, and pierced through the extremity of the gulf behind the Iſle of the Tail, where they found a little wooden houſe and a large channel. On the following morning they hauled their anchors on board, and raiſed their topmaſts, under the idea of endeavouring a ſecond time to continue their voyage; but the admiral not being of this opinion remained at anchor.

On the morning of the twenty-fifth they ſaw the ice enter into the Weigats, on the eaſtern ſide, ſo that they were conſtrained to weigh anchor, and to depart from the ſtrait by the weſt, in order to direct their courſe homewards. On the thirtieth the fleet was

at the iſland named Wardhuis, and it remained there at anchor until the tenth of October, when it continued its courſe; and on the eighteenth of November entered the Meuſe, after a voyage of four months and ſixteen days.

THIRD VOYAGE OF THE DUTCH AND ZEALANDERS BY THE NORTH ALONG NORWAY, MOSCOVY, AND TARTARY, TO PASS TO THE KINGDOMS OF CATHAY AND CHINA, BY PERMISSION OF THE COUNCIL OF THE CITY OF AMSTERDAM, 1596.

AFTER theſe two voyages, which had failed of the deſired ſucceſs, the idea of undertaking a third was not relinquiſhed; but their High Mightineſſes were unwilling to countenance the attempt. Nevertheleſs it was decreed, that if there were individuals, cities, or corporations, willing to bear the expences of the voyage, they would not be prevented; and that if they could furniſh ſufficient proofs of having ſucceeded, and paſſed, the ſtate would make a conſiderable recompenſe in money, and the ſum was ſtipulated.

The council of the city of Amſterdam, which was not diſcouraged, ordered two veſſels to be equipped, at the commencement of the year 1596, and the crews engaged under two conditions, which were, that they ſhould be paid according to a certain rate if they returned without having ſucceeded; or according to another certain rate if they accompliſhed their deſign. The recompenſe to be made in the latter caſe was conſiderable. They took as few married perſons as poſſible, leſt their affection for their families ſhould occaſion them to think too much of return.

The two veſſels were ready to ſail at the beginning of May. James Heemſkerk was appointed maſter and ſteward, as before, and William Barentſz firſt pilot of one, and John Corneliſz Ryp was appointed ſteward of the other.

On the eighteenth of May they departed from Vlie, and on the twenty-ſecond were in ſight of Hitlandt of Faverhill*. On the thirtieth they found themſelves in lat. 69° 24′, and on the firſt of June they experienced no night.

On the ſecond of June, at half paſt ten in the morning, they ſaw a ſurpriſing phenomenon in the heavens. On each ſide of the ſun appeared a mock-ſun, with a rainbow paſſing through theſe three ſuns. There were beſides two other rainbows, one ſurrounding the ſuns, the other croſſing the true ſun, the loweſt part of which was elevated 28° above the horizon. At noon they obſerved the altitude with the aſtrolabe, and found themſelves in lat. 71°.

The veſſel of John Corneliſz being always to windward of that of William Barentſz, without coming up to him, induced Barentſz to ſtand to the N. E., in order to come to the wind and join him, thinking that he lay too much to the weſt; and indeed this appeared in the end. In the evening, when they had joined, Barentſz told him they lay too much to weſtward, and that he muſt bear to the eaſt. Corneliſz anſwered, that he did not wiſh to enter the ſtraits of Weigats.

They then ſailed N. E. and by N., and were nearly ſixty leagues in the main ſea. Barentſz was of opinion that they ſhould rather bear to the E. N. E. than to the N. N. E., on account of their having drifted ſo much to the weſt. He even thought that they ſhould ſteer to the eaſt, at leaſt for ſome time, and until they had recovered what they had

* Probably Faverhill in Shetland.

loſt.

loſt. But Corneliſz would not yield to theſe reaſons; on the contrary, he perſiſted in the deſign of always running in a N. N. E. direction, convinced that if they bore to the eaſt they would enter the Weigats. Barentſz was finally compelled to join him, and ſteer N. E. and by N.; whereas they ſhould have ſtood to the N. E., and even have ſteered more to the E.

On the fifth of June they began to ſee ice, which ſo ſurpriſed them that they imagined at firſt they ſaw ſwans, and thoſe on deck cried out they beheld a quantity ſwimming. The others who were below having aſcended to the quarter deck, and conſidered the thing with a calmer eye, told them that the ſwans were juſt converted into flakes of ice: in fact, they were floating banks of ice which had been detached. At midnight they came up with this ice, the ſun then being elevated about a degree above the horizon to the north.

On the ſeventh they were in lat. 74°, ſailing along the ice, as if running between two ſhores: the water was as green as graſs, and they preſumed they were near Greenland. In the mean time the ice thickened as they advanced.

On the ninth they diſcovered an iſland, lying in lat. 74° 30′, which appeared to them to be about five leagues in length. On the eleventh they landed and found a quantity of ſea-gulls' eggs. They afterwards aſcended a mountain, ſo ſteep that the ſides ſeemed almoſt perpendicular, from which they deſcended with the greateſt difficulty and danger, not being able to look down without diſmay, and beholding nothing but rugged points of rocks, where the would have been daſhed to pieces if they had fallen or ſlipped. They therefore deſcended gently, ſome on their knees, ſome ſliding, without meeting any accident, although Barentſz, who remained in the ſhallop, obſerving them, was in doubt if he ſhould ever behold them again alive.

On the morning of the twelfth they ſaw a white bear, and directed the ſhallop after him, to endeavour to throw a ſtrong nooſe about his neck; but they found him ſo furious, that they dared not attempt it. John Corneliſz having ſent a reinforcement of men and arms, they all attacked him together: the combat laſted four glaſſes, or two hours, and in the end they cut off his head with a hatchet. He was carried on board the veſſel of Corneliſz, where he was flayed: the ſkin was twelve feet long: part of his fleſh was eaten, but was not found good. This incident induced them to name the iſland *Beeren-eilandt*, or the Iſle of Bears.

On the thirteenth they weighed anchor, and while ſailing perceived towards the evening ſomething very large floating on the water: they imagined at firſt it was a veſſel, but approaching they found it to be a dead whale, upon which were a great number of ſea-gulls.

On the ſeventeenth and eighteenth they met with much ice, through which having paſſed, they came to the ſouthern point of the iſland, and exerted every effort to double it, without being able to ſucceed.

On the nineteenth they again diſcovered land, and having obſerved the altitude, found themſelves in lat. 80° 11′. The country in ſight was of great extent, which they coaſted, running weſtward to lat. 79° 30′, where they met with a good road; but they could not approach nearer on account of a N. E. wind, which came directly from the land, the bay ſtretching into the ſea N. and S.

On the twenty-firſt they caſt anchor in ſight of land, in eighteen fathoms of water, and the crew of Barentſz went with that of Corneliſz to ſeek for ballaſt on the weſtern coaſt. As they were returning on board a white bear entered into the water and ſwam towards their veſſel. Leaving the labour of the ballaſt, they threw themſelves into the ſhallop and directed it towards the bear, who ſwam more than a league into the ſea.

They followed him with three ſhallops and ſmall boats: moſt of the arms with which they ſtruck him broke on his body. Once alſo on his ſide, he darted his paws with ſo great a force againſt the ſtem of one of the boats, that if he had darted againſt the middle of the veſſel in the ſame manner, there is every appearance he would have overſet it. At laſt they killed him and carried him on board: his ſkin was thirteen feet in length.

After this affair they ſailed in a ſhallop for more than a league towards the land, where they met with a good port, ſixteen, twelve, and ten feet in depth; and entering farther towards the eaſt, they ſaw two iſlands extending eaſtward into the ſea. On the weſtern ſide was a very large gulf, and another iſle in the centre, having ſailed towards which they landed and found plenty of wild geeſe, and the geeſe themſelves in their neſts, which flew away on ſeeing them: they killed one, which they dreſſed with ſome eggs.

They were of the ſame ſpecies which come every year in ſuch great flocks into Holland, and eſpecially to Wieringen, in the Zuiderzee, between North Holland and Frieſland, it not having been known before where they went to lay. Some authors had aſſerted that thoſe eggs were the fruit of certain trees in Scotland, planted on the ſea ſhore, and that thoſe which fell to the ground broke to pieces, while thoſe which fell into the ſea were immediately hatched; and that the little goſlings ſwam as ſoon as they were born. It is not to be wondered at that the place of the neſts of theſe geeſe ſhould be unknown, ſince it does not appear that any perſon till then had ever ſailed as far as lat. 80°, nor that this country had ever been diſcovered.

It ſhould be remarked, that although this iſland, which theſe navigators conceived to be Greenland, lies in lat. 80°, and even ſtill higher, there is nevertheleſs verdure and graſs, and beaſts of paſture, as rein-deer and other animals; and that neither herbs nor verdure exiſt in Novaya Zemlia, which is farther diſtant from the arctic pole by four degrees, and where are only ſeen carnivorous animals, as bears and foxes.

"This country, which the author of the journal here followed believed to be Greenland, is the moſt northern country which has been diſcovered to the preſent time. It is ſituated between Greenland, which depends upon Norway, and Novaya Zemlia, which belongs to Moſcovy, directly by the ſide of Finmarch, or the northern part of Norway. This iſland extends, at leaſt according to the knowledge poſſeſſed when this journal was publiſhed, from the ſeventy-ſixth to beyond the eightieth degree, and conſequently is more than ſixty German leagues in length.

"It was the difference of opinion between William Barentſz and John Corneliſz, which has been mentioned above, that occaſioned the diſcovery of the weſtern coaſt of the iſland. Since that time Henry Hudſon, an Engliſhman, has alſo ſailed there, of whom Hondius relates in his great planiſphere that he met with a coaſt quite covered with ice to the N. W. of the iſle, by the latitude of between eighty-one and eighty-two degrees.

"Since that time the Engliſh have ſailed there every ſummer, to fetch the teeth of the ſea-cow, whale fins, and the blubber of the ſame fiſh. This fiſhery was firſt undertaken by the Ruſſian company at London; but the Dutch, French, and Biſcayans have ſince alſo ſailed there. From the knowledge we have of that country, which the Engliſh call Greenland, and the Dutch Spilberg, Spitſberg, or Spiſberg, we have deſigned a map*, which is here annexed, principally founded on the map of John Daniel, of London.

"This iſland, as before mentioned, lies between lat. 76°, and lat. 80° N. N. W. from

* This map is now very antiquated and erroneous.

the

the Iſle of Bears, which is beyond Norway. It is under a climate which the ancients had reaſon to believe uninhabitable on account of its cold. There is no country in the world in which the nights are ſhorter. During the ſix months of ſummer the light never wholly fails; and during two months of the ſix months of winter, when the ſun is beyond the line, and in proportion as it recedes the days are only of twelve, ten, eight, and finally of one hour; it does not ceaſe when it is at the loweſt, and in the middle of this long night, to riſe twelve degrees and a half above the horizon, that is, in lat. 80°, and during the twenty-four hours is ſeen the light of day-break; thus, according to Ptolemy and others, the dawn may appear when the ſun is only eighteen degrees under the horizon.

"But although the day is of ſuch length, and the ſun ſhines for ſo long a time, without intermiſſion in this rigorous climate, it does not prevent the ſummer from being the ſhorteſt and the leaſt warm of all the countries north of the line. The ice has ſometimes been ſeen ſo thick and ſtrong on the thirteenth of June along the coaſts, and at the mouth of the harbours, that the veſſels could not enter. The ſnow itſelf, which always remains in certain places, had melted ſo little in others, that the rein-deer could find nothing to graze on, and were become perfectly meagre.

"The cauſe of this exceſſive cold, and theſe long winters, is that the ſun never riſes higher on the horizon than 32° 20′: thus its rays ſtrike the earth obliquely; ſo that only gliding over it, inſtead of penetrating, they cannot ſufficiently warm it. By the ſame reaſon the rays of the ſun are not of ſufficient ſtrength to diſſipate the vapours and fogs which riſe from the earth, and which remain on the mountains and the ſea, often preventing the crews of the veſſels from ſeeing farther than the length of a ſhip.

"It is beſides by the ſame principle that this land, of which to the preſent time, that is to ſay, when this relation was publiſhed, only the coaſts are known, appears overſpread with high mountains, whoſe ſummits are perpetually covered with ſnow; and that in the plains which interſect them neither trees, buſhes, nor fruits are ſeen; of verdure there is nothing but a ſhort and thick moſs, of a yellowiſh colour, through which ſhoot little blue flowers. Nevertheleſs ſome mariners aſſert that they have obſerved a green plant like hay.

"The animals which are ſeen there are white bears, larger than oxen, and ſtags, or rein-deer: the latter feed on the moſs, and during the ſpace of a month which ſome veſſels remained off theſe ſhore, they were obſerved to become ſo fat, that the fleſh was excellent.

"They have very crooked horns, and are rather ſmaller than ſtags: they are unaccuſtomed to the ſight of men, as may be concluded from what has been ſaid, yet are not ſtartled at ſeeing them. Sometimes they have been wounded with muſquets, and have run towards thoſe who fired, as if to ſeek ſuccour or refuge in their arms, and ſtruck them ſo violently as to occaſion their falling to the ground.

"On theſe coaſts are alſo ſeen white and grey foxes, and even black. The Engliſh have found horns, which the connoiſſeurs pretend to belong to the unicorn. Nevertheleſs thoſe which have been brought to Holland have not diſcloſed to what ſpecies they belong.

"A great quantity of whales, of different ſpecies, reſort to the mouths of the harbours, many of which are eighty feet long, and have ſo much fat that from it much oil is derived. Some have no fins on the back; but at the mouth have pendants, reſembling great beards, ſometimes a fathom and more long. Six hundred pieces are drawn from the ſame mouth: they are ſituated above, and ranged like the teeth of a comb, in the place where other fiſh have their teeth, and there are only thoſe above. The front and

back ones are very ſmall, ſo that in general they do not reckon on a greater number than four hundred. It is the only conſiderable profit which can be derived from this coaſt.

" On each ſide of the back part of the head the whales have large fins, where they are more eaſily ſtruck with the harpoon and more dangerouſly wounded. When they are wounded, and the blood runs from the head, they force the water and blood through the vent which they have above the head as high as the maſt: when they have exhauſted their ſtrength by ſtruggling the boats approach, and throw darts on their head and in the aperture.

" The whales have a thick black ſkin, covered with a black cuticle, and ſmooth as ſatin: their food is a ſmall fiſh, called by the French a ſea-flea, and which is not ſo large as the ſamphire plant: they ſwim with the mouth open, and ſwallow this little fiſh while ſwimming, ſhutting their mouth as ſoon as it enters.

" There are alſo white whales, which are of little value. Whitings are alſo found but in ſmall quantity. There are many aquatic birds, and particularly ſea-gulls, which gather on dead whales; two kinds of divers; loms, which properly are a ſpecies of parrot, geeſe, mallards, ducks which lay very large eggs, and a great quantity of wild geeſe.

" A little farther north are found ſea-cows, which may be named ſea-elephants, for they much reſemble the elephant by the ſize of the body, and by their teeth: as to their ſkin, though it be very thick, and that ſome have been ſeen at Amſterdam weighing four hundred pounds, it is however not eſteemed, becauſe it is unequal and foul. They have much lard, which may be clarified ſo as to afford oil. When they ſee another cow of their ſpecies which is dead, they aſſemble in great numbers, and placing themſelves upon it they heat it, and occaſion it to corrupt.

" At five leagues ſtill farther north, where are channels of freſh water, there are ſeen marine dogs, of the ſame nature as thoſe which are ſeen in theſe provinces, that is to ſay, the United Provinces.

" This is all the knowledge relative to the ſtate of this country which was poſſeſſed at the time of the publication of the preſent relation."

On the twenty-third of June a part of the crew landed, with the intention of obſerving the variation of the compaſs: while they were thus occupied a white bear ſwam towards the veſſel, and would have entered if he had not been perceived. They fired ſome ſhot, when the bear returned to the iſland in which were the other part of the ſailors. Thoſe who remained on board ſeeing him return ſailed immediately towards land, and ſhouted with all their ſtrength to warn their companions, who hearing theſe cries, imagined the veſſel had ſtruck on ſome rock. The bear itſelf was ſo frightened that it took another route leading from the iſland, at which thoſe on board were much rejoiced, for their companions had no arms.

With reſpect to the variation of the compaſs, they found it to differ 16°. On the twenty-fourth they ſailed and approached very near to ſhore, where having landed, they found two teeth of the ſea-cow, each weighing ſix pounds, and alſo another ſmall one. On the twenty-fifth they ſailed along the coaſt in 79° lat. and having diſcovered a large gulf they entered it, and advanced about ten leagues; but were obliged to tack about quickly in order to depart, on account of contrary winds.

On the twenty-eighth they doubled a cape lying on the weſtern coaſt, where was ſo great a quantity of birds, that they caſt themſelves in great flights againſt the ſails of the veſſel.

On the twenty-ninth they were obliged to bear off from the land on account of the ice, and they arrived in lat. 76° 50′.

On

On the firſt of July, they were again in ſight of the Iſland of Bears, when John Corneliſz with the other officers of his veſſel went on board that of William Barentſz, where not being able to agree as to the route they ſhould take, it was finally ſettled that each ſhould ſteer the courſe he judged proper. In conſequence Corneliſz, following his idea, returned again to latitude 80°, thinking he ſhould be able to paſs by the eaſt of the lands which are there, and he then ſteered towards the north.

Barentſz on the contrary purſued a ſouthern direction on account of the ice. On the eleventh he imagined himſelf by calculation to lie N. and S. with Candinous, or Candnoes, the eaſtern point of the White Sea, which remained to the S. and he bore to the S. and S. and by E. in latitude 72°, and conceived himſelf to be near the land of Sir Hugh Willoughby. On the ſeventeenth he arrived in latitude 74° 40′. At noon he obſerved Novaya Zemlia, towards the bay of Loms. On the eighteenth he doubled the cape of Admiralty Iſle, and on the nineteenth ſaw the Iſle of Croſſes, under which he anchored on the twentieth, the ice preventing him from advancing farther.

Eight of the ſeaman ſailed towards land in the ſhallop, where they went to viſit one of the croſſes, and placed themſelves at the foot in order to repoſe, before viſiting the other. Theſe two croſſes have given name to the iſland. Proceeding to viſit the other croſs they preceived two bears at the foot, at which they were very much alarmed, not having any arms. The bears raiſed themſelves quite upright againſt the croſs in order that they might the better ſee the perſons coming towards them, for they can ſmell at a far greater diſtance than they can ſee, and afterwards ran to meet them.

The ſailors fled towards their boat, looking behind from time to time to ſee if they were followed by theſe ferocious beaſts. But the maſter ſtopped them, and threatened to plunge the boat hook he held in his hand into the body of the firſt man who fled; becauſe, he ſaid, it would be better to keep all together than to ſeparate, in order to frighten the bears by their ſhouts. They therefore walked an ordinary pace towards the boat, where they eſcaped with much joy.

On the twenty-firſt of July, they were in latitude 76° 15′, and the variation of the compaſs was 26° or a little more. On the ſixth of Auguſt, they paſſed by Cape Naſſau, and on the ſeventh were under Cape Trooſt, where Barentſz had long wiſhed to be. In the evening the weather became ſo hazy that it was neceſſary to moor the ſhip to a bank of ice, of thirty-ſix fathoms depth in the water, and about ſixteen fathoms above, ſo that it was altogether fifty-two fathoms in thickneſs.

On the ninth of Auguſt, the veſſel being ſtill moored to the bank of ice, the maſter who was walking on deck, heard the breathing of an animal, and immediately beheld a bear attempting to mount the ſhip.

He immediately cried out all hands on deck! and all the crew having aſcended, they ſaw the bear with his claws againſt the ſide of the veſſel, and endeavouring to enter. They began ſhouting all together as loud as they could, at which the beaſt frightened retired a little farther off. But returning immediately from behind the bank of ice to which the veſſel was moored, and walking fiercely towards them, ſtill endeavoured to throw himſelf within. They had had time to ſtretch the ſail of the ſhallop over the upper works of the veſſel, and a part of the crew was near the windlaſs with four firelocks. The bear was wounded and fled, without their being able to ſee on which ſide, on account of the ſnow which fell very thick. It is very probable he went behind one of the mountains of ice which had gathered on the banks.

On the tenth of Auguſt, the ice having ſeparated, the flakes began to float, and it was then obſerved that the large bank of ice to which the veſſel had been moored,

reached to the bottom, becauſe all the others paſſing along, ſtruck againſt this bank without moving it. They were therefore afraid of being encloſed by the ice, and endeavoured to leave that part of the ſea; although in paſſing they found the water already frozen, the veſſel occaſioning the ice to crack for a conſiderable diſtance around it. They finally arrived at another bank, where they preſently caſt a ſtream anchor and remained moored there till night.

After ſupper, during the firſt watch, the ice began to break with ſo dreadful a noiſe as not to be deſcribed. The head of the veſſel lay in the current which broke up the ice, ſo that they were obliged to let out more cable in order to be clear of it. More than four hundred large banks of ice were counted, lying ten fathoms under the water, and apparently of the height of two fathoms above.

They afterwards made the veſſel faſt to another bank, ſix long fathoms under water, and they moored it by the ſtern. When they were ſettled there, they perceived at a little diſtance another bank, the top of which ended in a point like the point of a ſteeple, and it reached to the bottom of the ſea. They advanced towards it, and found it to be twenty fathoms under water and nearly twelve above.

On the eleventh of Auguſt they ſailed again towards another bank, being eighteen fathoms deep, and ten fathoms above the water.

On the twelfth they advanced towards the coaſt, that the veſſel might not be carried away by the ice, and that at all events it might be in greater ſecurity; for the larger banks of ice could not approach it, being only in four or five fathoms of water. In that place was alſo a great fall of water which deſcended from the mountains. The veſſel was again moored to a bank of ice, and this place they named the Little Cape of the Ice.

On the thirteenth of the ſame month of Auguſt, in the morning they ſaw a bear coming from the eaſtern point towards the veſſel. A ſailor broke one of his legs by a muſket ball. Notwithſtanding which he went back and climbed up a monntain. Several of the crew left the ſhip, and having purſued him, killed and flayed him.

On the fifteenth Barentſz ſteered along the coaſt of Orange Iſle, where his veſſel was entangled in the ice, near a great bank, in danger of ſhipwreck. But he extricated himſelf by approaching the land, though with extreme difficulty; and when he had moored himſelf, the wind veered to the S. E.: which occaſioned him to change his anchorage.

While the crew were all engaged in performing this change, the great noiſe they made awoke a bear who was ſleeping quite cloſe. He immediately ran towards the veſſel, and obliged all the labourers to quit their work in order to defend themſelves. The bear received a muſket ball in his body, and fled thus wounded to the other ſide of the iſland, where he placed himſelf on a bank of ice. They followed him, and ſeeing the ſhallop ſailing towards him, he threw himſelf again into the water and endeavoured to get back to the iſland. They intercepted his paſſage, and wounded him on the head with a hatchet. They endeavoured to follow up the blow, but every time the hatchet was raiſed, he plunged into the water and avoided the blows with ſuch dexterity that it was with great difficulty he was killed.

On the ſixteenth ten men in the yacht ſailed towards Novaya Zemlia. They drew the ſchuyt on the higheſt part of the ice, which reſembled a little mountain, and obſerved the altitude in order to know in which direction the main land lay. Thy found it to lie S. S. E., and afterwards ſtill more to the S. This led them to think though very unſeaſonably, that the continent extended towards the ſouth. At the ſame time they obſerved the water to the S. E. to be free, and imagined the ſucceſs of their voyage was

inſured; ſo that they were extremely impatient to carry this pleaſing intelligence to Barentſz.

On the eighteenth they got ready and wiſhed to ſail, but in vain, for having navigated with great difficulty, they were obliged to return to the place from which they departed.

On the nineteenth they doubled Cape Deſire, and conceived freſh hopes of being able to ſail. Nevertheleſs they got entangled again in the ice and were obliged to put back. On the twenty-firſt they entered Icy Harbour, and remained at anchor there during the night. On the following morning they left it, and moored their veſſel to a bank of ice on which they mounted, and admired its figure as being of very ſingular form.

This bank was covered with earth at the top, and nearly forty eggs were found. The colour was not that of ice, but of a ſky blue. Thoſe who were there, reaſoned much concerning this object. Some ſaid it was in fact ice, while the others maintained that it was a frozen land. However this might be the bank was of very great height, being about eighteen fathoms under water, and ten above.

On the twenty-fifth of Auguſt, at three in the afternoon, the tide again began to force the ice along; and they imagined they could ſail by the ſouth of Novaya Zemlia towards the weſt of the Weigats. For as they had paſſed Novaya Zemlia, and not having found any paſſage open, they had no more hopes of being able to proceed farther, and prepared to return to Holland, when being arrived in the Bay of the Currents they were impeded by the ice, which was ſo thick that they were obliged to put back.

On the twenty-ſixth having entered Icy Harbour, they remained there incloſed by the ice which floated from all parts, and rolled along with great force; ſo that they were not able to extricate themſelves. They even had nearly loſt three men, who were on the ice endeavouring to make an opening. But happily for theſe three men as the veſſel fell back, and the ice was carried along by the ſame ſide the veſſel was forced from, and that they were active and ſtrong, each of them took ſo well his opportunity, that one caught hold of the tacks, the other the ſheet, and the third the bight of the main brace which hung out of the back part of the ſhip; and thus they were all three moſt miraculouſly ſaved, ſo nearly had they been carried away by the ice.

In the evening of the ſame day they came to the weſt of Icy Harbour, where they were obliged to winter, and ſuffered a great deal, as much by cold, as the want of neceſſary articles, not to mention their vexation. On the twenty-ſeventh the ice floated about the veſſel, and as the weather was fine, part of the crew landed, and had penetrated a conſiderable diſtance, whilſt the wind, which veered to the S. E. and was ſufficiently ſtrong, detaching yet more ice, forced it towards the prow of the veſſel, and occaſioned it to pitch in ſuch a manner and at the ſame time to fall aſtern that it ſeemed to touch the bottom with both its extremities.

In this imminent danger, the ſhallop was let down, in order to ſave themſelves in caſe of neceſſity. They alſo hoiſted a flag as a ſignal to thoſe on ſhore to return on board; at the ſight of which they made all haſte to repair there, though they thought that the veſſel had already ſtarted.

On the twenty-eight the ice being ſeparated a little, the ſhip was recovered in its ſtation: but before this was quite accompliſhed, Barentſz went with the other pilot to viſit the prow. While they were there engaged, and on their knees and elbows in order to meaſure, the upper works of the veſſel ſtarted, and in opening made ſo dreadful a cracking that they believed themſelves loſt. On the twenty-ninth when it was completely in its ſtation, they endeavoured by means of iron crows and other inſtruments, to break and ſeparate the ice which lay in heaps, but without ſucceſs; ſo

that they had no longer hopes of being able to diſengage themſelves and to have a free navigation.

On the thirtieth the flakes of ice began again to gather in heaps more and more, around the veſſel, to which a ſtrong wind contributed much, and the ſnow which fell in thick flakes, and increaſed the height of theſe dangerous ramparts which ſurrounded it. There was a dreadful cracking every where both within and around the ſhip, and they were in dread of ſeeing it burſt and break to pieces.

As the ice was much more heaped up under the veſſel on the ſide whence the current proceeded, than the other, it firſt lay very much inclined; but finally it gathered in heaps in the ſame manner on the other ſide, and by this means the veſſel was ſet upright again, and lifted on theſe banks of ice, as if it had been intentionally raiſed with ſcrews or other machines.

On the thirty-firſt more flakes of ice floated towards thoſe at the head, and entirely raiſed up the prow; ſo that the ſtem was elevated four or five feet higher than the reſt of the veſſel, and the ſtern was ſunk between the ice, as in a pit. They were in hopes this incident would preſerve the rudder, and that the flakes of ice would no more ſtrike againſt it; but this did not prevent its breaking as well as the tiller. Nevertheleſs if it was not able to ſave the rudder, there is every appearance that it contributed the moſt to preſerve the body of the veſſel. For if the ſtern frame had been expoſed to the flakes of ice which inceſſantly floated, like the prow, they would have lifted up the whole veſſel, and finally overſet it, or even it might have filled the lower part with water, which was much feared.

Under this apprehenſion they had already got the ſhallop and yawl on the ice to retire to, and after having waited for four hours in anxious expectation of what might happen, the ice began to ſeparate and was carried away by the current. They all regarded this new incident as a deliverance ſent by God, and laboured with all their might to refit the rudder and tiller. It was afterwards judged proper to unhang it, in order that if they were again beſet with the ice, it might run no more hazard.

On the firſt of September the flakes of ice began again to heap together, ſo that the whole body of the veſſel was raiſed two feet, and nevertheleſs remained entire. In the afternoon they made the neceſſary preparations to draw the yawl and ſhallop to ſhore. On the ſecond the veſſel was ſtill more raiſed by new flakes, which occaſioned it to crack ſo dreadfully, and even to ſtart in ſeveral places, that notwithſtanding the bad weather they reſolved to drag the yawl to land with thirteen caſks of biſcuits, and two ſmall caſks of wine.

On the third the veſſel was beſet with freſh flakes of ice, which united with thoſe which already ſurrounded it, and held it ſo faſt. Then the after-piece which was at the ſtern poſt ſeparated, but the ſheathing ſtill remained. The cable which was anchored to the wind alſo broke, as well as a new cable which they had faſtened to the ice: ſo that it was to be wondered at that the body of the veſſel ſhould remain entire, conſidering the violence, the quantity and the ſize of the flakes of ice, ſome of which were ſeen floating as high as the ſalt mountains ſeen in Spain, and were only at muſket ſhot diſtance from the veſſel.

On the fifth after ſupper, the banks of ice preſſed ſo againſt the veſſel, that it remained quite inclined on one ſide, and was greatly injured, though always without ſeparating. Nevertheleſs as they imagined it could not reſiſt much longer, they carried to ſhore an old fore-ſail, powder, lead, firelocks, muſkets, and other arms, in order to make a tent near the place where was the yawl. They alſo carried more biſcuit, and wine, with carpenters' inſtruments, to refit the ſhallop if neceſſary. Beſides there was

ſo little water about the veſſel, that they were not able at one time to draw up a full bucket.

On the ſeventh, five ſailors having landed, two of them returned on board, and the three others walked for two leagues, into the country, where they ſaw a river of freſh water, and a quantity of wood which had floated on its banks. They alſo ſaw traces of rein deer and elks, at leaſt as well as they could judge from the marks of the feet, and the different ſize of theſe veſtiges, ſuch as they appeared imprinted on the ground.

On the night of the ninth two bears came cloſe to the veſſel, which they put to flight by the noiſe of trumpets and guns which they fired, although none of them took effect on account of the fog. On the eleventh being calm weather, eight ſailors well armed went on ſhore, in order to ſee if the three others who had already been there, had well obſerved every thing, and if they were not miſtaken in the report they had made concerning the wood on the banks of the river. For after having been locked in the ice at different times, and extricated themſelves from it, they found themſelves this time incloſed in ſuch a manner, that they well perceived it being the ſeaſon of autumn and winter approaching, there was no more room to hope they ſhould be able to diſengage themſelves. Thus preparing to paſs the winter, they had held counſel all together as to what was to be done, in waiting what it would pleaſe God to order concerning them.

It was therefore reſolved to fortify themſelves againſt the cold, and the attacks of wild beaſts, and to build a hut for this purpoſe. They had a favourable opportunity for executing their deſign. On the ſhore were found even whole trees with the roots, which had been brought, either from Tartary, or Moſcovy, for there were none on the ſpot; ſo that they found the three firſt ſailors had made a faithful report. This beginning of good fortune induced them to hope that heaven would grant them hereafter greater favours, and that ſince it furniſhed them with the means of building a retreat, to warm themſelves and to prevent their periſhing by cold, which would have been inevitable without this aſſiſtance, it would alſo facilitate to them the means of returning to their native country.

On the fifteenth of the ſame month of September, in the morning, the man who ſtood centinel, preceived three bears, one of which remained behind a bank of ice, while the others advanced towards the veſſel. As the crew were preparing to fire, one of the bears was about to put his head into a tub where ſome meat lay in ſoak at a conſiderable diſtance from the veſſel, becauſe there was no water in the part where it lay. At the ſame inſtant the bear received a muſket ball in his head, which laid him dead. The other bear remained as if thunderſtruck: he attentively regarded his companion ſtretched on the place, and ſeeing him make no motion, he ſmelt to him, and at length went away. They followed him with their eyes, and as they preceived him return, and raiſe himſelf on his hind legs in order to caſt himſelf on the ſailors, they fired and ſhot him in the belly, which cauſed him to fall again on his feet, and then he fled making a great howling. They opened the dead bear, and having taken out the entrails, they placed him on his four legs, in order to ſee if he would be ſufficiently frozen to carry him to Holland, if they had the good fortune to extricate the veſſel.

The work of the building of a hut was at length begun, by preparing a ſledge to convey the wood. At this time the ſea was all frozen to the thickneſs of two fingers. On they ſixteenth they brought four rafters from a league diſtant, by walking always on the ice or the ſnow. During that night it ſtill froze of the thickneſs of two fingers. On the ſeventeenth thirteen men departed to ſeek for wood, ten of which conveyed it, while the other three cut it. On the twenty-firſt the froſt increaſed to ſuch a degree,

that it was neceſſary to tranſport the kitchen articles to the lower part of the hold, every thing freezing in the cook room.

On the twenty-third the carpenter died, and on the twenty-fourth was buried in a cleft of a mountain, near a water fall, for the earth was ſo frozen that it was impoſſible to dig a grave. On the twenty-fifth the rafters were fixed, and the building began to aſſume its form. On the twenty-ſixth the wind blew from the weſt and the ſea was free, but the veſſel not being diſengaged, the crew only beheld this mitigation of the weather with vexation.

The whole of the crew did not conſiſt at that time of more than ſixteen men, of whom ſome-one was frequently ſick. On the twenty-ſeventh it froze ſo hard, that one of the crew being at work putting a nail into his mouth, as is the cuſtom of workmen, the ſkin came away when he drew it out, and the blood followed. The cold latterly became ſo intenſe, that it was only an extreme deſire of preſerving life, which could have enabled them to ſupport the hardſhip of their labour.

On the thirtieth the wind was E. and E. S. E., and it ſnowed ſo hard on the preceding night, and all this day, that the height of the ſnow prevented their going in queſt of wood. They made a great fire along the building to thaw the earth, and raiſe it around like a rampart in order to form a better incloſure, but in vain, for the earth was frozen ſo hard and to ſuch a depth that it was impoſſible to ſoften it, and if they had been determined to accompliſh it in all events, it would have conſumed too great a quantity of wood.

On the ſecond of October the hut was in an advanced ſtate, and near it was raiſed a May-pole of frozen ſnow. On the fifth the ſea was obſerved to be open as far as the eye could extend, notwithſtanding which the ice about the veſſel did not melt; ſo that it ſeemed as if they had built a wall on purpoſe to raiſe it two or three feet, and it was found that the water in this part was frozen to the bottom, that is to ſay, to the depth of three fathoms and a half. On the ſame day the front cabin was cut up, and the planks were uſed to cover the hut, in form of a roof with two ſlopings: which was nearly completed on the ſame day. On the ſeventh the aftermoſt cabin was cut up, to make a fence around the hut.

The wind, which was violent during the night of the ſeventh, continued all the following day, and brought ſo much ſnow, that it ſeemed very probable that thoſe who ſhould be expoſed to the air, would have been ſuffocated. Beſides it would have been totally impoſſible to walk as far as the length of a ſhip, and to ſuffer the rigour of the cold, and the inconvenience of the air, during that time.

On the fifteenth the air became a little milder, ſo that they were enabled to leave the ſhip. One of the crew being on ſhore met with a bear, which he did not perceive till he was near to him. He turned back, and fled with all haſte towards the veſſel. The bear purſued him, and arriving at the ſpot where they had placed the other bear which had been killed a ſhort time before to freeze, and was completely covered with ſnow, excepting one of his paws that was raiſed in the air, he ſtopped there; which gave the ſailor an opportunity of reaching the veſſel and ſaving his life.

As he was very much frightened on entering the ſhip, he could utter nothing but *a bear, a bear.* The other ſailors having aſcended above, in order to fire on the bear, could ſcarcely perceive any thing, on account of the ſmoke in the veſſel, while they were ſhut up in it; and which they could never have believed poſſible to ſupport, if it had been to gain all the wealth of the world, if they had not been influenced to preſerve their lives, which they would ſoon have loſt, by the incredible ſeverity of the cold, and the inconvenience of the ſnow. The bear did not wait till their eyes were free, and retired without being ſeen.

On

On the eleventh the wine and the other proviſions were brought to land, and on the twelfth half of the crew ſlept in the hut they had built, where they ſuffered extreme cold, becauſe as yet they had no beds, and little covering. Nor could they make any fire, the chimney not being yet built, and the ſmoke on this account inſupportable.

On the thirteenth three ſailors went to the ſhip, and placed ſome beer on a ſledge, in order to carry it away; but as they were ſetting off, there aroſe ſo violent a wind, there was ſo great a ſtorm, and the cold ſo intenſe, that they were not only obliged to re-enter the veſſel, but even to leave their beer without, on the ſledge. The following day they found the bottom of a caſk of ſtrong beer of Dantzic * completely cracked by the ſtrength of the froſt; and the beer inſtead of running out was frozen and ſtuck to the bottom as if it had been ſtrong glue. The caſk was carried into the hut and placed upright. They thawed the beer, for there was very little in the middle of the caſk which was not frozen; but what was not congealed, having loſt the taſte of beer, becauſe the ſtrength had been drawn away, was no longer fit to drink; and that which they thawed had only the taſte of water. They thought of mixing them together again, which however did not reſtore the original taſte or virtue.

On the night of the ſixteenth a bear attempted to enter the veſſel; but hearing the voices of the ſailors towards break of day, he retired. On the eighteenth after taking the biſcuit from the yawl which they had dragged to land, they alſo took out the wine, which was not yet frozen, though the froſt had already continued with great ſeverity for ſix weeks.

On the nineteeth another bear attempted to get into the veſſel, where only two men and a boy remained who were very much alarmed. The two men ran to the bottom of the hold, and they boy climbed to the top of the fore ſhrouds. In the meantime ſome ſailors advancing from the hut, the bear went directly up to them as ſoon as he perceived them, but fled at the firſt ſhot they fired at him.

On the twentieth they returned to the veſſel to carry away all the beer: they found ſome caſks which the froſt had ſplit, and ſeveral iron hoops broken on thoſe in which was the ſtrong beer. On the twenty-fourth all the remainder of the crew, to the number of eight, retired to the houſe, and they were obliged to convey on a ſledge a ninth who was ſick. They alſo dragged with incredible labour, the ſhallop of their veſſel, and they placed it with the keel upwards, in order to make uſe of it when opportunity ſhould offer.

In fine ſeeing that the veſſel was frozen in ſuch a manner, that they could have no hopes of ſeeing it ſoon diſengaged, they carried back the ſtream anchor on board, leſt it ſhould be loſt under the ſnow, and that they might uſe it in the following ſummer, hoping to find then ſome favourable occaſion for returning to their country.

In the mean time the ſun, the ſight of which was the only benefit and pleaſure which remained, beginning to abandon them, they made all poſſible diligence, to convey on their ſledges the remainder of the victuals in the veſſel, and the rigging neceſſary to equip the ſhallop, in order to carry them to their hut. On the twenty-fifth of the ſame month of October, while occupied in this work, the maſter who happened to raiſe his eyes, ſaw three bears behind the veſſel, who were advancing towards the ſailors. He cried out loudly in order to frighten them. On their ſide the ſailors threw their ſtraps on the ground, to put themſelves in a ſtate of defence. Luckily two halberts were found on the ſledge: the maſter took one, and Gerard de Veer the other. The others ran towards the veſſel, but one of them fell into a chaſm

* A ſtrong and medicinal beer, made with the berries of ſweet briar.

in

in the ice; an accident which made all the reſt ſhudder thinking the bears would inevitably devour him. Inſtead of which theſe ferocious beaſts purſued thoſe who fled towards the veſſel; during which time the maſter with de Veer and the man who had fallen into the chaſm, went round the veſſel, and entered on the oppoſite ſide to the bears.

Theſe ſavage animals ſeeing that they had entered, advanced furiouſly towards the veſſel where the crew, having no other arms but the two halberts on which they could not depend, endeavoured to divert their attention by throwing pieces of wood at their head, and other things after which they ran each time a piece was thrown, in the ſame manner as a dog runs after a ſtone. One of the ſailors was ſent into the cook-room to ſtrike a fire, and another to ſeek for ſome pikes. The more the ſailor haſtened, the leſs was he able to kindle any fire, ſo that there was no opportunity of uſing their firelocks. In the mean time the bears always returned to the aſſault with equal fury. A halbert was thrown which having ſtruck the largeſt directly on the mouth, he began to retreat, and the others who were conſiderably ſmaller, followed him ſlowly at a diſtance, and left the crew to the liberty of dragging their ſledge to their hut.

On the twenty-ſixth, the greater part of the water was free cloſe to the land, but the ice always continued about the veſſel. On the twenty-ſeventh, a white fox was killed, which they roaſted; it very much reſembled the rabbit in taſte. The ſame day they were employed in mending, and fixing the clock. They alſo prepared a lamp to burn in the night time, and for this purpoſe they uſed the fat of a bear which they melted. On the twenty-ninth they carried on ſledges a quantity of the herbs and other things left by the ſea on the ſhore, which they placed about the ſail that incloſed the hut, that the cold might penetrate leſs through the planks, which were not let into each other, the bad weather not having permitted them to do otherwiſe.

On the firſt of November, in the duſk of the evening they ſaw the moon riſe in the eaſt, and the ſun yet roſe ſufficiently high on the horizon to be perceived. On the ſecond they ſaw the ſun riſe in the S. S. E., and ſet near the S. S. W.; but the whole of his diſk did not appear above the horizon: he was only ſeen on the horizon itſelf, and a part of it remained concealed. On the ſame day they killed a fox with a blow of a hatchet, which they roaſted.

On the third the ſun roſe in the S. and by E., a little nearer the S. than the S. E., and ſet in the S. and by W., alſo a little nearer the S., and the top alone of its diſk appeared above the horizon, although the ſituation where they took altitude was as high as the top of the veſſel, which lay cloſe. On the fourth it was no longer obſerved, although the weather was very ſerene.

At this time the ſurgeon took a caſk or an empty pipe, and made a bath of it, where they bathed one after another: from which they experienced much benefit. On the ſame day they took a fox, this animal appearing at that time while the bears were retired as well as the ſun, and did not again appear till the return of that ſtar.

As the ſun had quitted the horizon, the moon had come to take its place, appearing all day and night without ſetting, when it was in its higheſt quarter. The ſixth, was ſo dull a day that it could not be diſtinguiſhed from the night, the more as the clock, which would have aſſiſted them, had ſtopped; ſo that not conceiving it to be day, all the people remained for a long time a-bed without riſing but on neceſſary occaſions, and when they roſe, the were not able to diſcern if the light they ſaw was that of the day or the moon. They even had much diſpute concerning it, but finally found that it was day and even the middle of the day.

On the eighth they diſtributed the remainder of the bread, and the portions were fixed at four pounds and five ounces for eight days, inſtead as formerly of the ſame portion

portion only laſting for five or ſix days. As to the fiſh and meat they imagined there was no neceſſity of diſtributing them; but for the drink, they were in want of it, and what beer remained poſſeſſed no ſtrength nor taſte. On the eleventh they fixed a net made of rope yarn on a hoop, to catch foxes: ſo that when a fox was underneath, he remained there caught as in a trap, and they could draw the trap and the fox into the hut. The ſame day they took a fox.

On the twelfth the diſtribution of the wine was fixed at two ſmall cups each day, and they had nothing beſides to drink but water from melted ſnow which they took from without. On the eighteenth the maſter diſtributed to each perſon a piece of thick cloth, to cover themſelves, or to uſe in any manner they ſhould chooſe againſt the cold. On the twenty-ninth the cheſt of ſheets was opened, which were alſo diſtributed to make ſhirts, for the preſſing neceſſity obliged them to ſeek every method to relieve their perſons.

On the twentieth, the weather being tolerably fine, they waſhed their linen, but it was not perfectly waſhed: for as ſoon as they drew it from the boiling water, in order to wring it, it froze. It even continued frozen near the fire on the outer ſide, and only the ſide facing the fire thawed; ſo that it was neceſſary to plunge the other ſide again into the boiling water in order to thaw it.

On the twenty-ſecond they ate together a large Dutch cheeſe, one of ſeventeen which they ſtill poſſeſſed, and the remainder was divided that each man might manage his portion at diſcretion. On the twenty-third as they ſaw foxes, they conſtructed traps of thick planks, which they furniſhed with ſtones in order to render them the heavier, and fixed ſhort ſtakes in the ground about the place where the planks fell, in order to prevent the foxes from digging, and eſcaping; and they took ſome by this method.

On the twenty-fourth two men who were indiſpoſed bathed, and on leaving the bath, the ſurgeon made them take a purgative medicine from which they derived much benefit. On the twenty-ſixth, twenty-ſeventh, and twenty-eighth there fell ſuch a prodigious quantity of ſnow, that they remained buried in their hut, without being able to leave it on any occaſion whatever. But the weather clearing up on the twenty-ninth, they began to dig the ſnow with ſhovels, made an opening, and finally got out, by crawling through they hole they had dug. They found their traps covered with ſnow, but diſengaged them, and on the ſame day took a fox; an aliment which became neceſſary, there being no other to be found in the ſnow, even when it was poſſible to remove it. By this they were alſo furniſhed with ſkins, to make caps proper to ſecure their heads from the ſeverity of the cold.

On the firſt of December the ſnow ſtill environed their hut on all ſides; which occaſioned ſo great a ſmoke when they wiſhed to make a fire, that they were obliged to lay in bed almoſt all day, except the cook who at length aroſe to prepare ſome victuals. On the ſecond day they made uſe of ſtones which they heated and placed around them in their beds, becauſe the cold and ſmoke being equally inſupportable, they could ſcarcely find means to protect themſelves at the ſame time from both of theſe evils.

On the third, while in their beds, they heard the ice of the ſea crack with ſo horrible a noiſe, that they imagined the mountains of ice which they had ſeen during the ſummer, and which had appeared of ſo many fathoms in height were detached and heaping upon one another.

In the mean time as during two or three days that they had not ſo much fire as uſual, it froze ſo hard within the hut, that on the floor and walls was ice of the thickneſs of two fingers, and there was ſome even in their beds where they lay. They then prepared the ſand-glaſs of twelve hours, and took care to keep it in good order, that they might

know the time, for the froſt had ſuſpended the motion of the dials, though they had increaſed the counterpoiſes.

On the ſixth the cold was ſo great, that not being able to ſupport it any longer, they regarded each other with languiſhing looks and pity, believing the cold would ſtill encreaſe and extinguiſh their lives: in fact, however great they made the fire, they could no more warm themſelves. The dry wine of Serez, which is of a very hot nature, alſo froze ther, and they were obliged to thaw it on the days of diſtribution, which was performed every other day, when each man had half a pint, and after that they had only water, a drink very little fit for their condition, and the cold which overwhelmed them, and beſides it was ſnow-water.

The ſeventh was as ſad a day as the preceding. This day they conſulted together as to the beſt means of reſiſting the cold: it was reſolved to fetch from the veſſel the pit-coal which was there, becauſe it affords great heat, and burns for a long time. In the evening they made a large fire of this coal, which warmed them ſurpriſingly; but they thought not of the return and the ſad effects this pleaſure might poſſeſs. This warmth, which had done them ſo much good, they were willing to preſerve as much as poſſible, and for this purpoſe they entirely cloſed the windows and went to bed, very contented to lie ſo warmly, which rendered them gayer than ordinary, and occaſioned them to talk together for a long time after being in bed.

In the end they found themſelves all attacked with vertigos and ſwimmings in the head, ſome more than others, which they perceived by the means of one of them who being ſick could leſs ſupport them, and made lamentations. They all found themſelves in exceſſive pain, not being able to ſtand up: ſome however crawled to the chimney and door and opened them; but the man who opened the door fainted and fell down on the ſnow. De Veer, whoſe head was near to the door, having heard the fall, threw ſome vinegar in the face of the man who had fallen, and brought him to himſelf.

When the door was opened, the cold, which had done them ſo much harm, was of ſervice and recovered them; without it they muſt all have inevitably expired during the fainting which ſeized them. The maſter diſtributed to each a glaſs of wine to ſtrengthen their ſpirits.

On the ninth, tenth, and eleventh, the weather was fine and clear, and the ſky ſtarry; yet the cold increaſed to ſo great a degree, that thoſe who have not felt it are unable to conceive: the leather of their ſhoes froze on the feet as hard as if it had been horn, ſo that they were of no more ſervice. They made a kind of covering, reſembling large ſlippers, of the upper part of ſheep ſkins, which they might wear with three or four pair of ſocks over one another, in order to warm their feet: their garments were even quite white with ſnow and froſt: when they remained without ſufficiently long, the puſtules and pimples on their body, face, and ears alſo, were frozen.

On the fourteenth of the ſame month of December they obſerved the altitude, and found themſelves in lat. 76°. On the eighteenth ſeven of them went to obſerve the ſtate of the veſſel. The water had riſen an inch in eighteen days, during which time they had not viſited the veſſel, though it was not properly water but ice, becauſe the water froze immediately it appeared above the ice. The water brought from Holland in caſks was alſo completely frozen.

The twenty-fourth, which was Chriſtmas-eve, they diſengaged their hut from the ſnow, in order that they might go out; a labour they were at that time obliged to perform every day. Although there was no day-light, they were enabled to ſee to a tolerable diſtance, and they perceived there were ſeveral places in the ſea perfectly free, which was occaſioned no doubt when the violent cracking of the ice was heard. Chriſtmas-day

was

was dreary, yet they heard foxes around the hut, which they would have been well pleaſed to have caught, to uſe in the preſſing want. The fire no longer appeared to caſt its accuſtomed heat, or at leaſt it could not paſs to near objects; for their ſtockings were burned before their feet received any warmth, and the burning of the ſtockings would not have been perceived, if the ſmell had not been affected.

In this manner paſſed the cloſe of the year, and in the midſt of theſe ſufferings the remainder of the crew of the veſſel entered on the year 1597. The commencement was not leſs ſevere than the preceding year had been: they began it by again diminiſhing the portions of wine diſtributed every other day; and as ſome of them feared it would be a conſiderable length of time before they left the place, though they always flattered themſelves with this hope, they ſpared that very neceſſary aliment, in order to make it laſt the longer, and to retain ſome in caſe of a more preſſing occaſion.

On the fourth of January they put on their chimney a lance with a ſmall piece of cloth, in order to know the quarter of the wind; but to learn it, they did well to obſerve it in placing the linen, for it was frozen in a moment after, and became as ſtiff as a ſtick, without being able to play or turn.

On the fifth the air being a little milder, they cleared their door, which had been ſhut for ſome days, and opened it: they made uſe of this opportunity for regulating the moſt neceſſary matters; among others they cut ſome wood and carried it into the hut, that they might not be in want of it, if poſſible.

The whole of the day being thus paſſed in laborious occupation, they recollected at night that it was twelfth-day, and entreated the maſter to permit them to take at leaſt ſome hours of recreation, among ſo many hardſhips and cauſes of grief. They were unwilling to uſe any thing but the wine they had voluntarily ſpared, and perhaps two pounds of flour, of which they made a kind of fritters cooked with oil; a meſs which was eaten with as good an appetite as they would have eaten the greateſt delicacies, if they had been at their own dwellings. They even celebrated the feaſt in all its ceremonies, drawing tickets, and the gunner was king of Novaya Zemlia; a country perhaps more than two hundred leagues long, ſituated between two ſeas.

On the tenth of January they found the water had riſen nearly a foot in the veſſel. On the twelfth they obſerved the altitude of the ſtar called the Bull's Eye; and it appeared to them that the altitude of this ſtar, and ſome others beſides, which they had obſerved, and that of the ſun, accorded very well, and that they were in lat. 76°, but rather higher than lower.

On the thirteenth the weather was clear and ſerene, and they perceived the light of day began to increaſe; for on throwing a ball they perceived it roll, which they could not before. From this time they went out every day, and exerciſed themſelves at walking, running, throwing, in order to revive their limbs: they alſo remarked at the ſame time a redneſs in the ſky, which was to them an aurora, the harbinger of the ſun. The air was alſo found leſs cold during the day; ſo that when they had a good fire in the hut, there fell from the boards and partitions large pieces of ice which thawed in the beds, a circumſtance which never happened before, however great they made their fire; but at night it always froze equally ſtrong.

On the eighteenth, as the wood-fuel diminiſhed greatly, they again uſed pit-coal, with the precaution of not cloſing the chimney, which prevented the former bad effects: nevertheleſs they judged it proper to be careful of it as well as the wood, and ſtill more ſo, for they expected to reimbark in their little veſſel without any covering, where they would have great occaſion for coal. It was alſo neceſſary in the ſame manner to diminiſh the portions of biſcuit, as well on account of the quantity already conſumed, as

becauſe the caſks were not exactly of the proper weight. Again, the capture of foxes was not ſo abundant as formerly; and this retreat of the fox was ſtill more grievous, as it was an indication of the ſpeedy return of the bears, who in fact appeared very ſoon after.

The twenty-fourth of January was a clear and fine day. James Heemſkerk, Gerard de Veer, and another, took the opportunity of walking towards the ſouthern ſhore of Novaya Zemlia. De Veer, when they leaſt thought of it, perceived a ſide of the ſun's diſk: full of joy they all three returned quickly to carry this agreeable news to Barentſz and the others. Barentſz, an experienced mariner, would not believe it, becauſe, according to all the computations, it would be fifteen days before the ſun could be ſeen in that altitude. The others maintained that they had ſeen it; and this diſpute gave riſe to wagers.

The twenty-fifth and twenty-ſixth were ſo very miſty that they could not ſee one another, ſo that thoſe who had wagered that the ſun had not yet appeared imagined they had already won: but the weather clearing up on the twenty-ſeventh, all the company together beheld the full diſk of the ſtar of day above the horizon; whence it was eaſy to conclude that a part had been ſeen on the twenty-fourth.

Nevertheleſs as this diſcovery is contrary to the opinions of all writers both ancient and modern, and that ſome may pretend that it is againſt the courſe of nature, and that it deſtroys the rotundity aſcribed to the heavens and earth, they conceived there would be perſons inclined to believe they were miſtaken; that they would ſay it was ſo long ſince they had beheld the day, that it was impoſſible to keep an exact account of the number of the days; that probably they had paſſed ſome days in bed and ſleep without being conſcious of it; and that in fine, from whatever accident it might ariſe, they muſt neceſſarily have made ſome error in their calculation.

But as for them who did not doubt of what they had ſeen, and who were unwilling to give occaſion to think that they might have ſome doubts, as they might have done if they had ſpoken leſs poſitively, and had not related the circumſtances and the reaſons, they have minutely written all theſe things, in order to ſhew that their computation was exact: they then ſaw, for the firſt time, the ſun in the ſign of Aquarius, in 5° 25′; and according to their former calculation, he ſhould have been in 16° 27′ before he could appear in the latitude of 76°, where they found themſelves to be.

Theſe circumſtances, ſo contrary to one another, occaſioned much aſtoniſhment, the more as they did not think it poſſible to be miſtaken in their computation of the time: they had marked day by day, without omitting any one, whatever happened: they had continually paid attention to their watches, and when they were frozen, they had recourſe to the twelve-hour-glaſs.

Their occupation at that time was to make different reflections, in order to conciliate what appeared ſo oppoſite, and to diſcover the truth with reſpect to the time. They conſulted the Ephemerides of Joſeph Scala, printed at Venice, which reached from 1589 to 1600; and they thereby found that on the twenty-fourth of January, which was the ſame day the ſun had appeared to them, the moon and Jupiter were in conjunction at one hour after midnight with reſpect to Venice.

On this remark they were attentive to obſerve that ſame night at what hour thoſe two planets ſhould be in conjunction, with regard to the place they were in, and they were five hours later than at Venice, that is to ſay, about ſix in the morning. During this obſervation they ſaw that they approached each other at times till ſix in the morning, when they were exactly the one above the other, both in the ſign of Taurus. Their conjunction took place by the compaſs exactly at N. and by E., and the ſouth of the

compaſs,

compaſs, or of the needle, was S. S. W., where was the true ſouth, the moon being eight days old; whence it appeared that the moon and ſun were at the diſtance of eight rumbs from each other.

This difference therefore between the place where they were and Venice was five hours in longitude, and that being ſuppoſed, we may compute how much farther they were to the eaſt than the city of Venice, that is to ſay, five hours, each hour being of fifteen degrees, which makes ſeventy-five degrees; from which it is eaſy to conclude that they were not miſtaken in their computation, but that by the means of theſe two planets they had found the true longitude; for the city of Venice is in long. 37° 25′, and the declination being 46° 5′: it follows that the hut which was in Novaya Zemlia was in long. 112° 25′, and lat. 76°. All which circumſtances are here related to ſhew that there was no error in their computation of time.

As to what regards the difference of time, which was about fifteen days, that they had ſeen the ſun at Novaya Zemlia ſooner than it ſhould have appeared, it is left to the learned to argue and to determine as well as they can.

On the ſame day, the twenty-ſixth of January, the ſick man of the company fell into a great ſwoon, and continued very bad till paſt midnight, when he died. On the twenty-ſeventh they dug a grave in the ſnow near the hut in order to bury him, though with no ſmall difficulty, on account of the cold which obliged them to work by turns. In fine, the pit being ſeven feet deep, they buried the dead man. The thirty-firſt was a very fine day, and they were able to enjoy the brightneſs of the ſun with pleaſure.

The firſt ſeven days of February were bad and ſtormy, which nearly occaſioned them to deſpair; for in the hopes of finer weather they had not taken the uſual precaution of providing themſelves with wood. The hut was again ſurrounded with high ramparts of ſnow: the fog was greater than it had been in the midſt of winter, and the ſnow fell as thick as ever. But they did not as before give themſelves the trouble of diſengaging their door each time; and when any thing occurred which obliged them to go out, they paſſed through the chimney, and thoſe who were not able were conſtrained to perform their neceſſities within.

On the eighth the weather became finer: they ſaw the ſun riſe in the S. S. E. and ſet in the S. S. W., that is to ſay, with reſpect to the dial of lead they had conſtructed near their hut, and fixed exactly ſouth of that place; for otherwiſe there was a difference at leaſt of two rumbs from their other ordinary compaſſes.

On the thirteenth they cleaned their traps: while they were thus occupied they ſaw a large bear coming directly towards the hut, to which they all retired in great haſte. One of them having taken aim, the ball ſtruck the bear on the breaſt, paſſed quite through the body, and went out by the tail, ſo that it became as flat as a halfpenny. The bear being wounded, made a great leap, and retired for twenty or thirty feet from the hut, where he fell. Thoſe who purſued him found him ſtill living, and he raiſed his head as if to ſee who had wounded him.

As they had already too fatally experienced the ſtrength of theſe animals, they did not ſtop there, but fired two other muſket-ſhots at him and killed him: they ripped up his belly, and having taken away more than a hundred pounds of fat and lard, they melted it; and by this means they had wherewithal to feed their lamp every night, which they had not done for ſome time, being in want of material; but now they had the pleaſure of having each a lighted lamp by his bedſide when they choſe. The ſkin of the bear was nine feet long and ſeven wide.

On the twenty-firſt they had no more wood remaining to warm themſelves, and the weather was very ſevere as well on account of the wind and ſnow as of the cold. It was

neceſſary therefore to collect together what wood they could, both from without and within, and uſe even the ſmall ſticks under their feet. The weather was finer on the twenty-ſecond: they prepared a ſledge to fetch ſome wood, but found it ſo covered with ſnow that it was impoſſible to diſengage it; thus they were obliged to proceed much farther, whence nevertheleſs they brought but little, and with ſuch great labour, that returning they all loſt their ſpirits, as the ſeverity of the cold was great, the labour of dragging the wood fatiguing, and the ſtrength of the labourers exhauſted by their exertions, and the inconveniences they then experienced; but, in ſhort, it was however indiſpenſable either to bring wood or periſh with cold.

When they approached the hut they perceived the waters open in different places of the ſea, which afforded them ſome conſolation, and awakened the hopes of a ſpeedy departure.

On the twenty-eighth they again went to the number of ten to fetch a ſledge full of wood, the eleventh of their company not being able to aſſiſt them, becauſe he had loſt his great toe by the ſeverity of the cold; and this labour was not leſs painful than the other.

On the eighth of March they ſaw no more ice on the N. E. ſide in the ſea, from which they concluded that there was a great ſea to the N. E. of them.

On the ninth they were able to ſee ſtill farther, and perceived all the ſea to the N. E. open; but on the ſide of Tartary there yet remained ice, whence they concluded that the ſea was of no great breadth on that ſide, even when the weather was perfectly ſerene: they imagined they diſcovered lands, and they ſhewed to one another to the S. and S. E. of their hut, a land which appeared to them like little mountains, and in the ſame manner as proſpects do when they firſt preſent themſelves.

On the fourteenth there aroſe a wind from the E. N. E., ſo violent and cold, that the ſea was again frozen as hard as ever. This ſevere weather occaſioned thoſe to relapſe, who having been ill, and growing better, had been a little too much expoſed during the milder weather. From this day the cold continually increaſed, and was even ſtill greater and more inſupportable than ever. This contrary weather, ſo little expected, diſpirited the whole crew in ſuch a manner, that they could ſcarcely conſole themſelves with the hopes of a ſpeedy thaw, which the ſeaſon ſeemed to promiſe.

During the night of the ſixth of April a bear approached the hut: notwithſtanding their endeavours to kill him with muſket and firelock ſhots, they were not able to take aim on account of the fog; and beſides the powder was ſo damp that it would not take fire, and their guns almoſt always failed to fire. The bear deſcended by the ſteps in the ſnow to the door, and attempted to enter; but the maſter placing himſelf behind it, kept it ſo well cloſed that the bear retired.

Nevertheleſs he returned two hours after and climbed to the top of the hut, where he made ſo dreadful a roaring that they were all alarmed: he advanced towards the chimney, and made ſuch great exertions to overturn it, that they feared he would accompliſh it: he tore the ſail with which it was ſurrounded, and having made an extraordinary ravage he at length departed.

On the eighth and ninth the wind blew from the S. W. and the ice diſappeared; but on the tenth a violent wind from the N. E. brought it back again, and filled the ſea, heaping the flakes upon one another, ſo that about the coaſt there were yet more and higher heaps than before.

This ſevere weather continued till the fifteenth, when they viſited their veſſel: they found it in the ſame condition they had left it. Returning they ſaw a bear who approached them: they immediately placed themſelves in a ſtate of defence, and the bear

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as if conſcious of his danger retired. They advanced to the place from which they had ſeen him proceed, in order to diſcover if he had no lurking hole: they found a large cavity in the ſnow, nearly as deep as the height of a man, narrow at the entrance, and very wide within: they thruſt their pikes into it, and not meeting with any thing, one of the company even entered it.

After this they went together to the ſea ſhore, from which they viewed the mountains of ice which covered the ſea, and which were nearly diſpoſed like the houſes of a great city, interſected with towers, ſteeples, baſtions, and ramparts. On the ſeventeenth ſeven of them returned to their veſſel: they there perceived that the water was free, which induced them to mount thoſe heaps of ice, and paſs as well as they could from one to the other till they reached the water, which they had not approached for ſix or ſeven months. Arriving there they beheld a little bird which dived into the water and concealed itſelf; and this induced them to think that the water was more open than it had been to that time.

On the eighteenth they obſerved the altitude, and found themſelves in lat. 75° 58′. On the firſt of May they cooked the remainder of their meat, which was as good as ever, at leaſt they thought ſo, and it appeared ſuch in eating: it poſſeſſed however this defect, that being dreſſed it would no longer keep.

On the ſecond of May there aroſe a violent wind from the S. W. which cleared the main ſea, and left no more ice. They each began then to talk of embarking and returning to Holland, being very weary at the ſtay they had made in ſo diſagreeable and incommodious a place. On the third all the remainder of the ice was carried away, except that which ſurrounded the veſſel.

Nevertheleſs the beſt proviſions, and which were the moſt fit to give them ſtrength, as meat, oatmeal, and others, failed them at a time when they had occaſion to ſtrengthen themſelves in order to ſupport the labour they had to perform. With this view the maſter diſtributed the remainder of the bacon, and he found enough for three weeks, at two ounces a day for each man.

On the fourth five of them went to the veſſel, which was more incloſed in the ice than ever, ſince in the middle of March it was only ſeventy-five paces from the open water, and at that time five hundred: this was a great ſubject of affliction, for they were not aware that they could drag the ſchuyt or ſhallop to the ſea. In the night a bear having come to the door of the hut, retired when he heard the voices and noiſe, as one of the ſailors obſerved who had aſcended the chimney; ſo that it ſeemed the bears began to be afraid, and dared not attack the men with their uſual boldneſs.

On the fifth, when the ſun was at the loweſt, they beheld it at a conſiderable height above the horizon. On the ſeventh and eighth the ſnow again fell in ſuch quantities that they were obliged to remain in their hut, where ſome of the ſailors propoſed to ſpeak to the maſter, and repreſent to him that it was time to leave that fatal place. Nevertheleſs no one dared to undertake it, becauſe he had ſignified and had deferred their departure to the end of June, when they might hope the veſſel would be diſengaged from the ice, being the fineſt weather of the ſummer. On the ninth all the crew, ſtill more urged with deſire of returning, entreated Barentſz to ſpeak to the maſter, and to perſuade him to embark; but Barentſz ſtopped them by his remonſtrances, and made them again defer their purpoſe.

On the fifteenth Barentſz having again been ſolicited ſpoke to the maſter, who told him that they ſhould only wait till the end of the preſent month, and that if the veſſel was not diſengaged in that time, they ſhould prepare to fit up the ſchuyt and ſhallop and depart. This anſwer revived the crew; but the period appeared very remote, becauſe it would require a conſiderable time to refit theſe little veſſels and equip them.

On the twentieth and twenty-firſt the wind blew from the N. E. and brought back the ice: nevertheleſs, with the conſent of the maſter, each began to prepare his clothes, and what he imagined he ſhould particularly want for the voyage. On the twenty-fifth they obſerved the altitude in the afternoon, and found themſelves in lat. 76°, as they had done before. On the twenty-ſixth and twenty-ſeventh the ſame N. E. wind blowing violently, again brought more ice. The crew having taken occaſion from this to urge the maſter, he permitted them to commence the work of equipment; and on the following day ſeven of them went to the veſſel and brought every thing that was neceſſary, among others the old foremaſt ſail, to make ſails, ſome running rigging from the packets of ropes, and other articles.

On the twenty-ninth ten men went to the ſchuyt to draw it to the hut and refit it. It was ſo buried in the ſnow that they had great difficulty to diſengage it; but they were not able to draw it after them on account of their weak ſtate, which occaſioned the moſt poignant grief, becauſe they then feared they ſhould end their days there. The maſter exhorted them briſkly to exert all their efforts, telling them that in fact, unleſs they were willing to become citizens of Novaya Zemlia, and very ſoon to prepare their graves there, they muſt recover the ſchuyt, and that the hopes of return depended on it; the ſtrongeſt and moſt affecting remonſtrance that could have been made.

But of what little avail are words and reaſons againſt a phyſical impoſſibility! Weakened by long exertions, and already fatigued with the labour, they were not able to proceed: they repoſed themſelves, and having dined, they returned again to try their ſtrength. The ſhallop, which lay with the keel upwards, was again overturned near the hut, and they began to repair it.

While they were labouring with ardour, they perceived a frightful bear coming towards them: they immediately re-entered the hut, where they waited at all the three doors with firelocks, and a fourth mounted the chimney with a muſket. The bear walked towards them with as much fierceneſs as any before, and approached to the declivity of the ſteps of one of the doors, where he was not perceived by the man on guard there, who was then looking towards the other door. Thoſe who were within ſeeing the bear, cried out for him to take care of himſelf: he turned his head, and notwithſtanding the fright he was in, he fired his gun, which having wounded the bear in the body, he fled.

This ſpectacle was diſtreſſing to thoſe who beheld it, for when the man perceived the bear, that ferocious beaſt was cloſe to him, ready to tear him to pieces; and if the prime of the gun had not taken fire, as ſometimes happens, there is no doubt he would have been devoured. Perhaps the animal would even have entered the hut, where he would have made a dreadful carnage.

In the mean time, the wound he had received prevented him from fleeing very far. When they perceived him ſtop, they ran to him with their arms, and having killed him, they ripped up his belly, where they found pieces of ſea dogs yet entire, with the ſkin and hair, which indicated that they had only juſt been devoured.

On the thirtieth all thoſe who were in a condition to work at the refitting of the bark employed themſelves, and the others mended the ſails, or made in the hut other neceſſary things for their departure. Another bear came again to preſent himſelf to the workmen without, who killed him. On the laſt day of the month, while they were engaged in their moſt laborious work, there came again a freſh one, who walked fiercely towards them. It ſeemed as if theſe animals perceived that their prey was about to eſcape, and which they wiſhed to prevent by returning three ſucceſſive days.

It was therefore neceſſary to quit their work and retire to their hut; the bear followed

them: he was received with a volley of three firelocks, which all took effect, the one from the chimney, and the other two from two of the doors. This death coſt them dear, for having cut the beaſt in pieces, and dreſſed the liver, and eaten it with pleaſure, they were all indiſpoſed: three of them were ſo very ill that they thought they would die; nevertheleſs they recovered, having a new ſkin from the head to the foot. Their re-eſtabliſhment ſcarcely gave leſs pleaſure to the remainder of the company than to themſelves; for the loſs of three men would perhaps have put them out of condition to work with any effect for their return.

On the third of June their ſtrength having returned, they reſumed the refitting of the bark, which was completed after ſix days' labour. At night there aroſe ſo violent a wind from the weſt that the water again became free, and they prepared to embark. On the fourth they went to the number of eleven to the ſchuyt, which was on the ſea ſhore, and dragged it to the veſſel; this labour being then more eaſy than it had been when they were obliged to quit it, either becauſe the ſnow was not ſo hard, and that the ſchuyt glided more freely over it, or that they poſſeſſed more courage by ſeeing the water free, and being on the eve of embarking.

They left three men there to refit the ſchuyt, which was properly a little herring-bark or herring-buſs, and was ſharpened behind. They cut off a part from the poop, made a little ſtern frame, and added ſome planks to the ſides, that the veſſel might have more depth, and be better able to ſtand the ſea.

The other part of the crew which was in the hut did not work with leſs ardour for the other preparations of the voyage. On this ſame day they conveyed two ſledges laden with proviſions and other articles from the hut to the veſſel, which was nearly half way between the hut and the place where the water was free, that they might not have ſo long a carriage when it was neceſſary to embark. On the ſixth they dragged two more ſledges laden with ſome proviſions and merchandiſe.

After this there happened a violent ſtorm from the S. W., accompanied with ſnow and hail, and particularly rain, which they had not beheld for a long time. The carpenters were obliged to quit their work and retire with the others into the hut, where nothing then remained dry; for the planks had been taken away to refit the little veſſels, and there only remained the ſail, which was not fit to keep out the rain. The path which was covered with ſnow began alſo to thaw, ſo that it was neceſſary to leave off the ſhoes they had made of hats to reſume their leathern ſhoes, in whatever ſtate they might be, and to make the beſt uſe they could of them.

On the ſeventh they packed up the beſt merchandiſe, and that which they choſe to carry back, and wrapped them round with tarpawling in order to protect them from the water, which could not fail frequently to ſplaſh in a little veſſel without cover. On the eighth they dragged their packages to the veſſel, and the ſame day the carpenters completed the repairs of the ſchuyt. On the ſame day alſo they dragged the ſhallop to the veſſel; and on the tenth they made four journies with the ſledge laden each time. They put what little remained of the wine in ſmall veſſels, in order to diſtribute it between the two boats; and alſo that in caſe one ſhould remain incloſed in the ice, as they well foreſaw what might happen, they could eaſily remove all the things from one boat to the other, or unload them on the ice in order to tranſport them.

On the eleventh they experienced a freſh ſubject of apprehenſion. A great tempeſt aroſe from the N. N. W., and they thought it might break the remainder of the ice on the ſea ſhore, and occaſion the veſſel to float, or perhaps ſplit it, in which was then every thing of the beſt they poſſeſſed both as to proviſions and merchandiſe; a misfortune which would have far exceeded all the others they had experienced, and againſt which they

they would not have been able to bear. But God did not permit ſo great a miſery to overwhelm them.

On the twelfth they all proceeded together with hatchets, ſpades, and all other neceſſary implements, to ſmooth a paſſage by which they might drag the boats to the ſea. The labour was ſevere: it was neceſſary to break the ice, dig, throw it aſide, tranſport it, and undergo a fatigue not to be expreſſed. Yet they would have conſoled themſelves if they could have done it in peace; but they were interrupted by a large ugly bear, lean and ſcraggy, coming from the main ſea on a piece of ice, and which they conjectured to come from Tartary, becauſe they had already met with it formerly at twenty or thirty leagues at ſea. As they did not expect ſuch an adventure, only the ſurgeon had a muſket, and De Veer was obliged to quit the others and run to the veſſel to fetch two or three more.

The bear perceiving De Veer detached from the company ran after him, and would have reached him if they had not immediately fired to prevent it. The report made the bear turn his head: he turned round and the ſurgeon fired a ſecond time, which wounded him: he immediately fled; but being impeded in his flight by the inequalities and height of the ice, ſeveral other ſhots ſtruck him, which knocked out his teeth, and he expired.

The fourteenth was fine weather. The maſter and the carpenters went to the veſſel, where they completed the equipment of the ſchuyt and ſhallop, ſo that it only required to launch them. After this perceiving the waters were open, and that it blew freſh from the S. W., the maſter told Barentſz, who had been ſick for a conſiderable time, that he was of opinion they ſhould embark. This propoſition was no ſooner communicated to the crew than it was accepted, and they prepared to launch the veſſels.

Barentſz then wrote a memoir, containing the circumſtances of their departure from Holland, their voyage, their arrival at Novaya Zemlia, the ſtay they made there, and their retreat, and put it in a muſket charge, which he hung in the chimney, in order that if any one ſhould land in the ſame place, they might be informed of what had happened to them, ſo as to profit by it, and to know by what adventure they found the remains of a little houſe, which had been inhabited for ten months.

Beſides this, as the voyage they were about to undertake with two ſmall veſſels without any cover muſt expoſe them to imminent dangers, the maſter thought proper to write two letters, which were ſigned by the whole crew, and one placed in each of the veſſels. In theſe was contained a recital of all they had ſuffered while waiting for the opening of the waters, and in the expectation that their veſſel would be then diſengaged from the ice; that having been deceived in this hope, and the ſhip always remaining fixed, as they ſaw the ſeaſon would ſoon paſs away, they had been obliged to abandon it, and to expoſe themſelves to the dangers of a voyage which delivered them to the mercy of the winds and waves; that they had judged proper to make a double memoir, in caſe the two veſſels ſhould be ſeparated either by a ſtorm, or any other fortune of the ſea, or if one of the two ſhould periſh, that it might be learned from the other how the circumſtances had come to paſs, and in it be found that teſtimony for the confirmation of what ſhould be related by thoſe who might chance to remain.

Thus after having agreed in all arrangements, they drew to the ſea the two veſſels, and eleven ſledges laden with proviſions, wine, and merchandiſe, which they were careful to place in the beſt manner poſſible for their preſervation: that is to ſay, ſix packets of fine woollen cloth; a cheſt full of linen cloth; two packets of velvet; two ſmall boxes full of money; two caſks of articles neceſſary for refitting, and clothes for the ſhip's company; thirteen caſks of bread, one of cheeſe; a ſmall caſk of bacon, two

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of oil, ſix of wine, two of vinegar, and the clothes of the crews. All this appeared ſo much when taken out of the veſſel, that it might have been ſaid to be impoſſible to accommodate it in the little ſpace of two ſuch ſmall veſſels.

When the embarkment had taken place, they alſo carried on board two ſick men, Barentſz and another, who were diſpoſed in the two veſſels, which the maſter cauſed to be moored cloſe to one another. At this time alſo he had the two memoirs ſigned, of which mention has been made.

In fine, on the fourteenth of June 1597, at ſix in the morning, they weighed anchor, and ſet ſail from Novaya Zemlia with a weſterly wind: they arrived that day at the Cape of the Iſles, where they ſtill met with much ice, and they remained there incloſed; which afflicted them in no ſmall degree, under the apprehenſion they might continue there: four of them landed to reconnoitre the country, and they knocked down four birds from the rocks with ſtones.

On the fifteenth the ice being a little ſeparated, they doubled Cape Fleſſingen, and came to Cape Deſire. On the ſixteenth they were at Orange Iſle, where they alſo landed, and having made a fire of the wood they found there, they melted the ſnow and put the water into ſmall caſks for drink. Three of them paſſed on the ice to another iſland, where they took three birds; but returning, the maſter, who was one of the three, fell into a hole in the ice, where he was in danger of periſhing, for there was at that part a very rapid current. They dreſſed the birds for the ſick.

After they had again ſet ſail, and were arrived at Icy Cape, the two veſſels joined, and the maſter, who was not in the ſame with Barentſz, aſked him how he found himſelf. Barentſz replied that he was better, and hoped he would ſtill be able to travel before they arrived at their inn. He aſked if they were at Icy Cape, and De Veer having anſwered him in the affirmative, he wiſhed to be raiſed up in order that he might behold that cape once more, for which there was leiſure enough, being again incloſed in the ice, and the veſſels completely ſurrounded.

On the morning of the ſeventeenth the flakes of ice ſtruck againſt theſe two little veſſels in ſo dreadful a manner, that the hair of the crew ſtood on end: they believed themſelves at their laſt hour, neither being able to ſtop the courſe of theſe floating maſſes, nor to prevent their being carried to leeward: they even found themſelves all together ſo preſſed between two banks of ice, that they took their laſt farewell of each other.

At length reſuming courage, they endeavoured to come nearer to the firm ice, to faſten a cord and tow the veſſels there, that they might be leſs expoſed to the floating flakes. When they had approached a little, there was no perſon who would go to moor the cord; the danger was too great: yet a virtue muſt be made of neceſſity, and the ſtrength of the balance prevail over the weak ſide. In this dilemma De Veer, who was the moſt nimble among them, undertook to carry the cord, and leaped from one flake of ice to the other, until, with the aſſiſtance of God, he happily arrived on the firm ice, and faſtened the cord about an eminence of ice.

All the others then alſo left the veſſels, and carried the ſick in ſheets on the ice, where they placed ſome other things under them in order that they might repoſe. They afterwards diſembarked whatever remained on board, and dragging the veſſels on the ice, they ſaw themſelves delivered from the fear of a death which had appeared almoſt inevitable.

On the eighteenth they refitted their veſſels which had been damaged from what they had ſuffered. They caulked the ſeams and covered them with tar-pawling having happily found ſome wood to make pitch. They afterwards landed to ſeek for eggs, to

give to the ſick who moſt earneſtly aſked for ſome: but they were not able to find any, and only brought back four birds.

On the nineteenth they were more incloſed in the ice than before, and no more beheld any part open, ſo that they thought they had only prolonged their lives for ſome days, unleſs God ſhould deliver them by ſome freſh miracle. On the twentieth at nine in the morning, the mate came on board the ſhallop, and ſaid that one of the crew, called Nicolas Andriſz, appeared to be drawing near to his end. Barentſz told him that he firmly believed his was not far off. The crew who perceived at the ſame time that Barentſz was looking over a chart, which De Veer had drawn of the places they had ſeen during the voyage, had not the leaſt idea of his being in that ſtate. They remained ſeated and converſed together of many other matters, until Barentſz putting aſide the chart, ſaid to De Veer, give me ſome drink. When he had drunk he found himſelf very bad, his eyes rolled in his head, and he expired ſo ſuddenly that they had not time to call the maſter who was in the ſchuyt. Nicolas Andriſz alſo expired immediately after. But the death of Barentſz extremely afflicted the whole crew, for they poſſeſſed great confidence in him, and he was very experienced in the art of pilotage and navigation.

On the twenty-ſecond the wind blowing freſh from the S. E., the ſea began to open. Yet it was neceſſary to drag the veſſels more than fifty paces on the ice, and after having launched them, to draw them again on other ice, and to drag them for more than thirty paces before arriving at a free and navigable part. Having performed this labour, they ſet ſail between four and five in the morning, and at noon got again entangled in the ice: but a little time after it ſeparated in a manner that it had the appearance of the opening of a ſluice. They then navigated a little along the coaſt, and afterwards ſuddenly found themſelves again completely incloſed, and notwithſtanding all their efforts to ſeparate the ice, they could not accompliſh it. At length the waters having again opened of themſelves, they continued to ſail along the coaſt.

On the twenty-third at nine in the morning, they came to Cape Trooſt, from which they could not depart on account of the freſh ice which ſurrounded them. On the ſame day they obſerved the altitude and found themſelves in latitude 76° 39°. Here the ſun ſhone clear; but it was not of ſufficient ſtrength to melt the ſnow, for which they would have had great occaſion in order to have water to drink, all of them ſuffering a great thirſt.

On the twenty-fourth at noon they diſengaged themſelves from the ice by means of their oars, and having gained the ſea, they ſailed onward well till they came to Cape Naſſau which they diſcovered, and from which they were according to their computation at the diſtance of three leagues. Three ſailors landed, and brought a little wood, which ſerved them to boil ſome meat, in order to have ſome warm aliment for their ſtomachs, of which they ſtood in very great need.

On the twenty-fifth and and twenty-ſixth there aroſe a heavy tempeſt from the ſouth during which the part of the ice to which the veſſels were moored broke and ſeparated. The veſſels being unmoored drifted out to ſea, without their being able to row towards the firm ice, and they were a hundred times in danger of periſhing. As they found they could not regain the land by means of the oars, they hoiſted up the foreſail, and ſtood towards the coaſt. But the fore-maſt of the ſchuyt broke twice; ſo that they were conſtrained notwithſtanding the violence of the wind, to make uſe of the main ſail. Scarcely was it hoiſted up when the wind took it in ſuch a manner, that if it had not been immediately lowered the veſſel would have been ſunk; for it already admitted the water every where by the ſide, and this accident, with the violence of the tempeſt, occaſioned thoſe expoſed to them to regard death as certain. But the time appointed by heaven

for

for their laſt hour, was not yet arrived. There ſuddenly aroſe a N. W. wind which calmed every thing, and favoured their paſſage to the firm ice, though they did not reach it without danger.

When they had arrived there, they looked about to endeavour to diſcover the ſhallop, and not ſeeing any thing of it, they navigated about a league along the ice without the leaſt ſign of it; ſo that they began to apprehend the veſſel was loſt. In the mean time there happened a great fog which obliged the crew of De Veer to fire a muſket, in order that they might anſwer if they heard it. In fact, the others anſwered, and this ſignal enabled to them rejoin.

On the twenty-ſeventh they arrived at a place on the weſtern coaſt of Cape Naſſau, where while they ſailed along the land, they beheld on the ice more ſea-cows than they had ever ſeen, or rather they ſaw an innumerable multitude. They alſo obſerved a flock of birds, at which having fired two muſkets together they killed twelve. On the twenty-eighth they diſembarked all their cargo, and placed it on the firm ice, where they alſo dragged their veſſels, becauſe the wind which came from the ſea, might force the ice towards them with too much violence.

As ſoon as they had deſcended on the ice they made tents of their ſails, and placed themſelves underneath in order to take ſome repoſe, leaving one man as centinel. About mid-night there came three bears towards the veſſels. The centinel diſcovering them, called out three bears, three bears. At this noiſe they all awoke, and proceeded from the tents with muſkets charged only with ſmall ſhot to kill birds. Although theſe ſhots might give no great wounds to the bears, they did not fail to turn back, and by this means gave an opportunity of loading the muſkets again. One was killed, and the other two fled.

They returned on the following day at three in the afternoon, to the place where the dead bear was lying, and one of them having taken him by the throat, carried him to a conſiderable diſtance on the moſt rugged ice, where both began to eat him. The crew ſeeing this fired a muſket, which occaſioned them to quit their prey and flee. Four men going to the place, found that in the little time they were about it, they had already devoured half of the body of their comrade, of which ſeeing the ſize, they were aſtoniſhed at the ſtrength of the bear who had carried him away by ſo difficult a path, ſince theſe four men had great difficulty to lift the remaining half.

On the thirtieth the weſterly wind again forced the ice with the ſame violence towards the eaſt; they beheld afreſh two bears coming on a bank of floating ice; which they believed to be the ſame they had ſeen the preceding day. They ſhewed a diſpoſition to attack the crews, but took another route. About half-paſt ten in the morning, another preſented himſelf on the firm ice, who retired as ſoon as he heard a noiſe.

On the firſt of July at ſix in the morning, which was the break of day, there came again a bear on the flakes of ice who plunged into the water in order to ſwim to the firm ice where the crews were, but retired at the ſound of their voices. About nine, the banks of ice coming from the ſea, ſtruck with ſo much violence againſt the firm ice that it ſplit into ſeveral pieces that to which the crew had retired with their little veſſels, and occaſioned it to float. This was a dreadful accident, for all their packages were on the ice, and the greater part fell into the water.

It became neceſſary therefore to exert freſh ſtrength in order to drag the ſhallop on the ice near the ſhore, where they hoped to be leſs incommoded by the flakes of ice. But having drawn the veſſel, when they would go to fetch the packets, they found themſelves in as great danger as ever they had been; for while they endeavoured to lay hold of a packet, the ice ſplit between both, or under another packet, and carried it

away. It even ſplit under the feet of the people while they were walking; ſo that they were at a loſs to know how to act, or how to ſave themſelves.

The ſame happened when they endeavoured to move the ſchuyt, the ice ſplit under their feet, and the ſchuyt was carried away with the crew. It was even broken in ſome parts, eſpecially in thoſe which had been altered or repaired. The maſt was broken; the croſs-piece of the maſt, and almoſt the whole ſchuyt was ſplit to pieces. There was alſo a ſick man within, who was not taken out but with extreme danger to the perſons employed in this charitable office; for the pieces of ice on which they were obliged to place themſelves, floated and ſtruck againſt other ice, and the leaſt blow which might have been given to an arm or a leg would have broken it.

At length after a conſiderable time of hardſhips and labour, the ice diſperſed a little, and the violence of their courſe diminiſhed. They then returned to their ſchuyt, and drew it again on the firm ice near the ſhallop, where it was in a little more ſecurity. This fatigue laſted from ſix in the morning till ſix in the evening, ſo that all the crew were quite exhauſted. They loſt that day two caſks of biſcuit, a cheſt full of linen cloth, a cheſt full of clothes and neceſſary articles for the equipment of the veſſels, the aſtronomical circle, a packet of ſcarlet cloth, a little caſk of oil, one of wine, and ſome cheeſes.

On the ſecond of July at half paſt four in the afternoon, the weather was finer, and ſix men were employed at the refitting of the ſchuyt, while ſix others went on ſhore to ſeek for wood. They alſo brought ſome ſtones which they arranged on the ice to ſerve as a hearth, and to make a fire, in order to melt ſome pitch to caulk the ſchuyt. They looked at the ſame time for a piece of wood to make a maſt, which they found. There was even ſome wood cut down and tools to cleave it which they carried away, and which indicated that the place had been frequented by men. The ſchuyt was repaired at two in the morning, and they afterwards roaſted ſome birds which they had killed, in order to eat, and recruit their ſtrength.

On the third two men were ſent to procure ſome water. They found at the watering place two of their oars, the tiller of the rudder, the cheſt of linen cloth, and a hat out of the cheſt of goods. They carried away their load, and when they were returned, they ſent four others who drew all the remainder of the water, and placed it on the ice, whence they again took it when they ſet ſail.

On the fourth the weather was finer than they had experienced ſince their ſtay on the coaſts of Novaya Zemlia. They availed themſelves of this opportunity to waſh in ſnow water the pieces of velvet which had been wetted by the ſalt water, and packed them up a freſh. On the fifth John Janſz of Haerlem, a relation of the deceaſed Nicolas Andriſz, alſo died. On the ſame day the flakes began again to float with violence. On the ſeventh they killed thirteen birds, on which they feaſted the following day.

On the ninth the ice continued to float, and the water became free towards the land. The firm ice, on which were the veſſels and crews, alſo began to ſeparate and float, which obliged them to draw their veſſels to the water more than three hundred and forty paces, a prodigious labour, and which they could never have performed if they had not been actuated to preſerve their lives. They ſet ſail between ſeven and eight in the morning; but at ſix in the evening were obliged to return to land, and replace themſelves on the firm ice, which was not yet ſeparated in that part.

On the tenth they exerted all their efforts to paſs through the ice, and failed till they found themſelves between two large ſurfaces of ice, very much reſembling fields, but which joined together in a part. It was neceſſary therefore to unload the veſſels again, tranſport their cargoes, and drag them themſelves on the ice till they ſhould again meet

meet with open water, which they did not for more than a hundred paces. Afterwards they again ſet ſail, but this did not continue long, and they were conſtrained to proceed more gently in order to paſs to a ſmall ſpace lying between two other fields of ice, which however were only two prodigious floating flakes, between which they paſſed before they were completely joined.

When they were without this ſtrait, the wind began to blow freſh from the weſt, and took them by the prow; ſo that they failed with all their efforts to regain the firm ice which with great difficulty they approached. They there again dragged their veſſels, and remained half dead with fatigue, and almoſt in deſpair at beholding the prodigious aſſemblage of difficulties.

On the eleventh a large and very fat bear advanced towards them from the water. He was received with three muſkets which were aimed at him together, and being fired when he was no farther off than about thirty paces, killed him at once. The fat quite warm which iſſued from his wounds, reſembled oil on the water where it flowed. Some of the crew placed themſelves on an ice bank which they directed towards the body, and having fixed a cord about his neck, dragged him on the ice, where they drew his teeth; and having meaſured the body, found it to be eight feet thick.

After this, three of the crew went to an iſland lying before them, from which they diſcovered the Iſle of Croſſes to the weſt. They advanced by that ſide, and entered this latter iſland, in order to ſee if there were no ſigns of the Ruſſians being arrived there; but they ſaw nothing that could in the leaſt induce them to imagine that any one had landed there ſince their departure. They took nearly ſeventy eggs of mountain mallards, and returned to join their companions, after an abſence of twelve hours which had appeared to the remainder of the crew who waited for them, a great time, and had occaſioned them great uneaſineſs.

They related, that in order to paſs to the Iſle of Croſſes, they had ſometimes been up to their knees in the water on the ice between the two iſlands, and that they had walked nearly ſix leagues going and coming. The others were aſtoniſhed at their boldneſs, and eſpecially being ſo weak as they all were that they had undertaken ſo fatiguing a journey. The eggs they brought were a very neceſſary and agreeable meſs for them all: and though amidſt ſo many difficulties they did not fail to make a very delicious repaſt. They alſo then diſtributed the remainder of the wine, of which each had three *mingles*, or ſix French pints.

On the ſixteenth a bear came towards them from the land. At firſt they could not diſcern if it was a bear, ſo much did his white ſkin glitter, and reſemble the ſnow. When he had approached they fired at him, and the ſhot taking effect, he fled. On the following day ſome of them wiſhing to go to the neighbouring iſland, to obſerve if there were any opening in the water, met about half way with the wounded bear, lying on a bank of ice. As ſoon as he heard them he fled, but one of them having given him a violent blow with a boat hook, the hook of which entered his ſkin, he fell back on his two hinder paws. The man would have followed up the blow, but the bear broke the hook to pieces, ſo that he who had given the blow fell backwards in his turn. The others immediately fired on the bear, which occaſioning him to flee, the ſailor who had fallen down roſe up, ran after him with the ſtump of his boat-hook, and diſcharged ſeveral heavy blows on his body. The bear turned back each time, and leaped three times againſt the man who ſtruck him. In the mean time his two companions having approached, they fired again at the bear and pierced him through the body, ſo that he fell back again and could no longer walk but with difficulty. In fine, they fired once more, and having killed him, they drew his teeth.

On

On the eighteenth they unloaded the veſſels, and having drawn them on the ice, they dragged them over it to a place where water was open. Afterwards they carried the cargo there, that is to ſay, for more than a thouſand paces; a fatigue under which they had nearly ſunk. They then again ſet ſail, and navigated till half paſt four in the afternoon, when they were again entangled in the ice: and it was neceſſary to draw their veſſels over as they had already ſo many times. They there had a diſtinct view of the Iſle of Croſſes from which they computed they were at the diſtance of a league.

On the nineteenth while the veſſels and the crew were on the ice, ſeven men paſſed at ſix in the morning into the Iſland of Croſſes, whence they beheld a conſiderable ſpace of water open to the weſt, which gave them great joy, and occaſioned them to haſten to bear this good intelligence to their companions. Nevertheleſs they took time to collect a hundred eggs, which were cooked as ſoon as they arrived, and diſtributed.

At two in the afternoon they laboured to put the veſſels into the water. It was neceſſary to drag them for more than two hundred and ſeventy paces, but this was performed with a cheerfulneſs which much alleviated the pain, in the hopes that it would be the laſt of that kind of fatigue they ſhould undergo. As ſoon as the veſſels were in the water, they ſet ſail, and made ſuch good way, that at ſix in the evening they were beyond the Iſle of Croſſes and immediately afterwards they ſaw no more ice, or at leaſt the little they beheld gave them no uneaſineſs. They bore to the W. and by S. with a good ſteady wind, blowing from the E. and E. N. E.: ſo that according to their computation they ſailed at the rate of eighteen leagues in twenty-four hours: which inſpired them with freſh courage, and with the hopes by the bleſſing of God of a happy return.

On the twentieth at nine in the morning they doubled the Black Cape, and at ſix in the evening obſerved Admiralty Iſle which they paſſed at midnight. They there beheld nearly two hundred ſea cows on a bank of ice, about which they were feeding, and they attacked them, of which they had occaſion to repent; for this ſpecies of marine monſters poſſeſſing an extraordinary ſtrength, they all ſwam towards the veſſels, as if with a deſign to attack them, and to revenge the injury they had ſuſtained; and they made all round a dreadful noiſe as if they had threatened to deſtroy every thing. The freſhneſs of the wind which forced the veſſels along, relieved them from a peril which they could well have avoided if they had been willing, and into which a want of prudence alone had drawn them.

On the twenty-firſt they doubled the Capes of Plancio and Laugenes. On the twenty-ſecond as they were cloſe to Cape Cant, the crew of Gerard de Veer landed to ſeek for eggs and birds. They did not find any; but afterwards about noon, ſeeing a rock covered with birds, they ſteered towards it, and throwing ſtones they knocked down and took twenty-two birds, and one of the crew having landed on the rock brought away twenty-three eggs.

About three in the afternoon, they came to another cape where they took nearly a hundred and twenty-five birds, taking the greater number by the hand in their neſts; for they were not alarmed at the ſight of the men, and no doubt were only afraid of the foxes and other wild beaſts, to ſecure themſelves from which, they built their neſts on thoſe high and ſteep rocks, where they could not aſcend. As for the men, if the ſight of them had frightened the birds, they might eaſily have eſcaped from their hands, for they could not go to take them in their own neſts, where they ſeemed to await being taken, without danger of breaking their legs or arms, or of periſhing, and ſtill more in deſcending than in mounting. Beſides, there was only one egg in each neſt, and it lay on the bare rock, without ſtraw or feathers, or any thing which could give it

warmth; ſo that there was room for wonder how theſe eggs could be brooded and hatched on account of the great cold which reigned there.

When they had again ſet ſail in order to depart from the coaſt, the wind became perfectly contrary. Beſides the ſea was ſo covered with ice, that after much difficulty, and making different tacks, they found themſelves again entangled. The maſter who was in the ſchuyt farther in the ſea, ſeeing the others in the midſt of the ice, and that they continually advanced, imagined they perceived open water farther off, in which he was not deceived; and that were they willing to reach it. Under this idea he tacked about and ſteered in the ſame direction, and both together bore towards the coaſt, where they met with a good harbour ſheltered almoſt from every wind. They landed there and brought wood in order to cook the birds.

On the twenty-third the weather being cloudy and foggy, and the wind blowing from the north, they were conſtrained to remain in that creek. In the mean time ſome of the crew advancing farther into the iſland, they found ſome ſmall ſtones of good gold. On the twenty-fourth they obſerved the altitude and found themſelves in latitude 73° 10′. The weather continuing unfavourable, they were obliged to remain longer in that place, where they went to ſeek for ſmall golden ſtones, and they brought away handſomer than they had obſerved before.

On the twenty-ſixth at noon, they again ſet ſail, and as the creek in which they were, was of great extent, it was already full midnight by the time they were without. On the twenty-ſeventh they ſailed along the coaſt through the broken ice, and at ſix in the evening they arrived at a place where was a very rapid current, which induced them to think they were near Coſtinſarch; for they ſaw a great gulf as they imagined extending to the ſea of Tartary. About midnight, they doubled the Cape of the Croſſes, and entered a channel between the main land and an iſland.

On the twenty-eighth of July, they ſailed along the coaſt, and came at three in the afternoon to the Abbey of St. Laurence, or under Baſtion Cape, where they found beyond the point, two Ruſſian barks which were at anchor. It would be difficult to deſcribe the joy of the whole crew at having arrived at a place where they had the ſight of men. Nevertheleſs this joy was damped by the reflection, that theſe men who were to the number of thirty, were not Hollanders but perhaps ſavages, or at leaſt other people with whom they were unacquainted, and who might treat them as enemies.

In the mean time they approached the ſhore with much difficulty, and the Ruſſians perceiving them quitted their work, and advanced towards them unarmed. Approaching one another they made ſalutations each according to his manner. Some of the Ruſſians recollected the Hollanders, and beheld them with compaſſion; and ſome of the Hollanders alſo remembered them to be the ſame they had ſeen in the preceding voyage, when they had paſſed the Weigats, and who had entered their veſſel. It was eaſy to obſerve on the countenances of the Ruſſians, the aſtoniſhment they were in, at beholding the others, and ſeeing them ſo meagre and caſt down, wandering in ſmall veſſels without decks, and quite expoſed; while before they had ſeen them in ſo beautiful a ſhip and ſo well equipped.

Two of them laid their hands in a friendly manner on the ſhoulders of the maſter and De Veer, in order to let them know they remembered them; for of all the Dutch crew which was there, only theſe two had been in the preceding voyage, in which they had ſeen the Ruſſians. They aſked, as well as could be comprehended, where their *crabble* was, that is to ſay, their veſſel. As they had no interpreter they made them underſtand in the beſt manner they could, that they had loſt it in the ice; upon which they

they replied, *Crabble propal;* the Dutch conceiving they ſaid, the veſſel is loſt, replied alſo *Crablé propal*, thinking to ſay, yes, we have loſt it.

Afterwards the Ruſſians made them underſtand that in the other voyage they had drunk wine in the ſhip. One of the ſailors comprehending that they ſpoke of drinking went to draw ſome water, and having preſented it to them they ſhook their heads and ſaid, *Nodobre*, by which they thought they would ſay, that is not good. The maſter having approached them, and having opened his mouth and ſhewn the inſide, in order to make them underſtand that he was tormented with the ſcurvy, and to aſk if they had no remedies for this diſorder, they conceived the maſter would ſay he was hungry, and having returned to their lodia they brought a loaf of rye flour of about eight pounds weight, and ſome dried birds. The maſter thanked them and alſo made them a preſent of half a dozen biſcuits. He invited two of the principal to come into the ſchuyt with him, where they preſented each with a glaſs of wine of what they had remaining. The other ſailors went to the place where were the other Ruſſians, and there boiled ſome biſcuits in water, in order to take ſomething warm. In fine it was a great conſolation to have commerce with men after being deprived of that pleaſure for thirteen months.

On the twenty-third in the morning, the Ruſſians prepared to ſail, and drew from beneath the graſs on the brink of the ſea, ſome tons of whale oil which they had buried in order to carry on board. The Dutch who had not been able to learn their route, perceived they took that of the Weigats. They ſteered the ſame courſe and followed them. But the weather was ſo dark and miſty that they loſt ſight of one another.

In the mean time the Dutch entered a channel between two iſlands, and paſſed them till they were again entangled in the ice, without ſeeing any opening by which they might leave it; which made them preſume that they were near the Weigats, and that the N. W. wind had thus forced the ice into the gulf. It was therefore neceſſary to put back, and return to the two iſlands, to one of which they moored their veſſels.

On the thirty-firſt they ſailed from this iſland towards another in which were two croſſes. Perceiving theſe, they perſuaded themſelves that they ſhould meet with ſome people there: but they ſaw no one. Nevertheleſs their trouble was not loſt; if they found no men they found ſome *cochlearia*, a herb of which they were nearly all in want, becauſe they were attacked with the ſcurvy, and ſo affected, that the greater part was ready to ſink under it. They ate the *cochlearia*, in great quantities, becauſe in Holland they had heard much ſaid of its virtue, and they experienced it to be yet greater than they had imagined. It had ſo great and ſudden an effect that they were ſurpriſed; ſo that thoſe who were no longer able to eat biſcuit, began to eat it directly.

On the third of Auguſt 1597 they determined to croſs from Novaya Zemlia to Ruſſia. With this intention they ſteered to the S. S. W., and ſailed till ſix in the morning, when they again got entangled in the ice. This new misfortune ſenſibly affected them, for they did not expect to be any more expoſed to it, and thought they had been completely clear of it.

A calm coming on at the ſame time, they endeavoured to extricate themſelves by their oars; and in fact by three in the afternoon they were in the main ſea, where no more ice was ſeen. As they proceeded at a good rate, they imagined they ſhould ſoon be off the coaſts of Ruſſia; but at nine at night they ſaw themſelves afreſh ſurrounded with ice; an accident which had nearly ruined them, and occaſioned them to fear they ſhould never be out of theſe dangerous parts.

Not being able therefore to ſail with the ſhallop, nor to double Icy Cape, they were obliged to paſs through the ice which ſurrounded them. While they were engaged in this, they advanced more than they did before, and at length after great difficulty found themſelves again in free water. As for the maſter, he was in the ſchuyt: and this veſſel, which was a better ſailer than the other, paſſed Icy Cape, after which they rejoined.

On the fourth at noon, they ſaw by the prow, the coaſt of Ruſſia, and having approached it they ſailed cloſe to the ſhore, and remained moored there till three in the afternoon when they again ſet ſail. They kept conſtantly cloſe to the ſhore, and proceeded at a tolerable rate till midnight when they diſcovered a Ruſſian veſſel and called out *Candnoes, Candnoes;* but the Ruſſians anſwered, *Pitzora, Pitzora;* giving the Dutch to underſtand that they were not yet near to Candnoes, as they imagined, but only near to Pitzora. This error aroſe from the variation of the needle of the compaſs, which was incloſed in a box encompaſſed with circles of iron, ſo that they were miſtaken by two rumbs. As they had obſerved their error, they judged it proper to moor, and wait for day.

On the fifth a ſailor having landed, found ſome graſs and ſmall trees. He called the others and told them to bring firelocks, becauſe there was game, at which they were extremely rejoiced: for the proviſions were nearly exhauſted, only ſome mouldy biſcuit remaining. Beſides ſome of the crew were of opinion they ſhould leave the veſſels there, and proceed by land, becauſe otherwiſe it was probable that they would periſh by hunger.

On the ſixth of Auguſt, the wind being contrary, they encouraged one another to row ſtrongly, in order to depart from the gulf; but after having rowed for nearly three leagues, they could not advance farther, as much on account of the contrary wind, as of their weak condition; and beſides the coaſt ſtretched farther to the N. E. than they had imagined. On the ſeventh they left the gulf, and reached the point of land where they had been before. There they were obliged to fix themſelves again with their hawſers, becauſe the wind always remained contrary, which made them heavy at heart, ſeeing there was no end to their hardſhips, and finding diſeaſe and hunger conſume them.

The eighth and ninth were not more favourable days. Some of the crew having landed, diſcovered a buoy between Candnoes and the continent of Ruſſia, and they concluded that this was the channel through which the Ruſſians paſſed. Returning, they met with a dead ſea-dog. They dragged it into the ſchuyt, and regarded it as a good piece of game, ſo greatly were they preſſed by hunger. But the others prevented them from eating it, telling them that it would certainly occaſion their deaths, and that it would be better to ſuffer ſtill, and wait what it ſhould pleaſe God to do with them: that it ſhould be hoped that out of his goodneſs he would at laſt provide for their wants.

On the eleventh they rowed till noon when they had a freſh breeze from the S., and having ſet the ſails they proceeded very quickly. In the evening, the wind increaſing very much, they ſailed towards the coaſt, and landed in order to water the veſſel if they could meet with any. They alſo erected tents on account of the rain which fell in heavy ſhowers, and which at midnight was accompanied with lightning and loud claps of thunder. All theſe new misfortunes, following thoſe with which they were already overwhelmed, reduced them almoſt to deſpair, and occaſioned ſome to wiſh for death.

On the twelfth at ſix in the morning they reſumed a little courage at ſeeing a Ruſſian bark coming towards them at full ſail. They haſtened as much as they could to ſtand

out to ſea and meet it. The maſter went on board the bark, and aſked at what diſtance they were yet from Candnoes; but he could not learn any thing, being unacquainted with the language. They extended five fingers, and the Dutch imagined this ſignified that there were five croſſes on the coaſt. They alſo drew out their ſteering compaſs, and ſhewed that the lands lay to the N. W. of them, and the Dutch found the ſame by their compaſs.

As the maſter perceived he could derive no intelligence from them, he entered farther into the bark, and pointing to a caſk of fiſh, aſked if they would ſell it, and preſented them a piece of forty ſols. They comprehended his intention, and gave him a hundred and two fiſh, with little cakes which they had cooked in the water in which they had boiled their fiſh. About noon they parted, the Dutch crew remaining very much ſatisfied at having obtained a little proviſion, becauſe for a length of time they had only had each four ounces per day, with water, and nothing more. They divided the fiſh equally between them, without the leaſt diſtinction.

On the thirteenth two ſailors landed in order to diſcover if the point of Candnoes ſtretched far into the ſea. At their return they ſaid there was every appearance that it was the ſame point they had conceived, and on this the ſpirits of all the crew being revived they rowed with great exertion along the coaſt. At three in the afternoon they obſerved that the cape which they had ſeen appeared at ſome diſtance to the S., and no longer doubted then that this was the Cape of Candnoes, whence they hoped to enter the mouth of the White Sea. With this intention the veſſels approached each other ſide to ſide, and ſtood out to ſea in order to paſs the White Sea, and go to Ruſſia, according to their idea. They ſailed with tolerable ſucceſs till midnight when there aroſe a violent tempeſt from the N., which ſeparated the two veſſels from one another.

On the fourteenth the weather clearing up, the crew of the ſchuyt diſcovered the others juſt within the reach of the eye, and uſed every exertion to rejoin them, but in vain, on account of a great miſt which aroſe. On the fifteenth they had a fine breeze, and about noon diſcovered land. They then imagined that they were to the weſt of the White Sea, beyond Candnoes.

When they were near to land they ſaw ſix barks of Ruſſians lying at anchor. They ſaluted them, and aſked them at what diſtance they were from Kilduin or Kildun. The Ruſſians gave them to underſtand that they were ſtill very far from it, and that they were only on the eaſtern coaſt of Candnoes. They ſtretched out their arms to ſignify that it was neceſſary to paſs the White Sea, and that it would be very perilous to undertake this voyage with ſuch ſmall veſſels. The Dutch having requeſted ſome proviſions, they gave them a loaf, which they ate with great appetite notwithſtanding its dryneſs. Nevertheleſs though they ſufficiently comprehended, the crew of the ſchuyt could not perſuade themſelves that they were at the place which was ſignified to them: they were willing at any rate to believe that they had paſſed the White Sea.

On the ſixteenth De Veer ſteered towards a bark, which he ſaw to ſtarboard, and to which he came up with great difficulty. They aſked the Ruſſian crew if they were near Zemlia of Cool, or otherwiſe Kilduin. The Ruſſians ſhook their head, and gave them to underſtand they were only at Zemlia of Candnoes. The Dutch were ſtill unwilling to believe them. They entreated them to give them ſome proviſions. The Ruſſians gave them ſome plaice, and the maſter having paid a piece of ſilver for them, tacked about in order to enter a channel before which they then were, and through which they would paſs into the ſea.

The

The Ruſſians obſerving their tacking, and that they took a wrong courſe, beſides that the tide was almoſt paſſed, ſent two men to them in a little yawl, with a large loaf. Theſe men gave them to underſtand that they would do well to return to the bark, where they would endeavour to give them more inſtruction. The maſter preſented another piece of ſilver with ſome cloth to theſe meſſengers, who continued without wiſhing to part. Thoſe who were in the large bark raiſed in the air a piece of bacon and ſome butter, to induce the Dutch to return. They therefore returned, and having ſhewed their chart to the Ruſſians; theſe latter made them comprehend that they were ſtill to the eaſt of the White Sea and Candnoes.

The Dutch were not leſs ſurpriſed than afflicted with this intelligence, which they could not believe till then, and to find themſelves ſo diſtant, eſpecially on account of their companions in the ſhallop. The maſter purchaſed of the Ruſſians three ſacks of flour, a ſide of bacon and half another, with a little caſk of honey, as much for his crew, as for that of the ſhallop, if they ſhould rejoin.

In the mean time the tide having paſſed, at the commencement of the ebb, they croſſed the channel at the mouth of which they were when the little yawl came to recall them, and ſtood out to ſea, ſailing until they had diſcovered a large cape ſtretching very far, which they believed to be Candnoes. At night they anchored under this cape, and boiled a pot full of flour with water; a meſs which they found excellent, the more ſo as they had mixed a little honey. They were yet extremely uneaſy on account of the ſhallop which they ſaw no more, and of the fate of which they were ignorant.

On the ſeventeenth being moored, they ſaw a bark coming from the White Sea to which they ſailed. On boarding they preſented them a loaf without being yet aſked for one. The Ruſſians wiſhed to make them underſtand in the beſt manner they could that they had ſeen their companions to the number of ſeven in their ſhallop, and ſpoken to them. But as they found they were not underſtood, they lifted up ſeven fingers, and pointed to the ſchuyt, giving them to underſtand that it was as ſmall a veſſel without deck which they had ſeen, and that they had ſold them bread, meat, fiſh, and other things. The crew of the ſchuyt beginning to comprehend what they ſaid, perfectly underſtood them by ſeeing in their hands a little compaſs which they had ſeen with the boatſwain's mate. They aſked them if it was long ſince they had ſeen their companions, and where they then were. The Ruſſians ſignified to them that it was the preceding day, and careſſed the Dutch very much, who did not do leſs in thanking them, eſpecially on account of the good intelligence they had given them with reſpect to the ſhallop. The maſter directed them to row with exertion towards the part where the ſhallop ſhould be, in order to endeavour to rejoin them; and having ranged all day along the coaſt, about midnight they met with a ſpring of freſh water, where they watered the ſhip, and at the ſame place they alſo found ſome *cochlearia*.

On the eighteenth at ſix in the morning, they drew up the large ſtone to which they were moored, inſtead of a ſtream anchor, and continued to range the coaſt, ſailing till noon, when they again beheld another great cape upon which there appeared indiſtinctly ſome croſſes.

Towards ſix in the evening, they recognized diſtinctly by the marks that it was the Cape of Candnoes, which is at the mouth of the White Sea, and under which they had wiſhed for a length of time to arrive. This cape is very eaſily known again by five croſſes which are there, and it can eaſily be perceived how it bears off on each ſide, on one ſide to the S. E., and on the other to the S. W.

While they were preparing to croſs to the weſt of the White Sea, towards the coaſt of Lapland, they perceived that the water had nearly all run out of one of their little caſks. They had more than forty leagues to go before they could meet with freſh, ſo that they judged it proper to ſail towards land in order to ſeek for ſome ſpring; but the ſea daſhed ſo violently along the coaſt that they dared not approach.

They again ſet ſail between ten and eleven at night, and ſailed all that night and the following day with a good wind, by which they made a great progreſs; ſo that on the twentieth, between four and five in the morning, they ſaw the land to the weſt of the White Sea, having before perceived by the roaring of the ſea that they were not far off. It was to them a great occaſion to give thanks to God, that in thirty hours they had happily paſſed the White Sea, in which they had a very perilous paſſage of forty leagues.

When they were off the coaſt, and found that there was no way of advancing by ſailing, they paſſed between ſome rocks, and came to a good road, where having entered, they ſaw a large bark at anchor, and ſome houſes on the coaſt: they rowed towards the bark, and having moored the ſchuyt there, they landed and proceeded to thoſe houſes. The inhabitants received them with kindneſs; they led them to a ſtove where they dried their clothes, and then ſerved them with fiſh. In theſe houſes were thirteen men, who went out to fiſh every morning, and two of which commanded the others; all of them living very ſoberly, and almoſt conſtantly on fiſh.

Beſides theſe thirteen Ruſſians, there were two Laplanders with three women and a child, who lived in great poverty, only eating the remnants of the Ruſſians, who left them ſome pieces of fiſh, and the heads which they threw to them, and which the Laplanders picked up, with great humility and many thanks. The Dutch regarded this manner of living with great compaſſion, who, in whatever ſtate they were themſelves, and whatever pity they muſt excite, could not forbear being moved for others, and concerned at the miſery of theſe unfortunate people.

On the twenty-firſt the maſter had ſome freſh fiſh dreſſed, of which the crew ate as much as they pleaſed, which had not happened for a length of time, and they made a porridge of water and flour to ſupply the place of bread. In the afternoon having advanced into the country to ſeek for ſome *cochlearia*, they perceived two men on a little mountain, and ſaid to one another that there muſt be more inhabitants in the place than they had ſeen; and afterwards, without making any other reflection thereon, they returned to their ſchuyt.

Theſe two men, who were their own companions, and of the crew of the ſhallop, deſcended from the mountain and went to the bark, to endeavour to procure ſome proviſions; but having come there without any deſign, and as it were without thinking of it, and having no money, they had reſolved to give two pair of their breeches, becauſe they had each two or three pair over one another. When they approached the bark they ſaw the ſchuyt, which was cloſe to it, at anchor, and recognized thoſe who were within. The joy was reciprocal; they meſſed together, and drank water as clear as that of the Rhine at Cologne.

The crew of the ſhallop had ſuffered ſtill more hardſhips than that of the ſchuyt, and both together returned thanks to God from the bottom of their hearts, becauſe he had permitted them to meet again. On the twenty-ſecond their companions arrived with their veſſel, and this completed their joy. They entreated the cook of the Ruſſians to wet a ſack of flour and make ſome bread, to which he very willingly conſented. As the fiſhermen returned at that time from the ſea, the maſter bought of them four ſtock-fiſh, which he had dreſſed.

While the Dutch were at dinner, the man who commanded the Ruſſians came to ſee them,

them, and as they had but little bread, he preſented them with ſome. They invited him to eat with them; but he would not, becauſe it was a faſt day; and they had thrown a little fat or melted butter over the fiſh. They could not even prevail on him nor his people to drink a ſingle draught, becauſe the cup appeared a little greaſy, and they would not lend their cups for fear they ſhould greaſe them; ſo ſuperſtitious are they in the obſervation of their faſts.

On the twenty-third the maſter made a handſome preſent in money to the commander of the Ruſſians, and paid the cook for his trouble in making bread, for which they both returned many thanks. At ſix in the evening the two veſſels ſet ſail during the ſpring tide. On the twenty-fourth, at ſix in the morning, they arrived at the Seven Iſles, where they met with many fiſhermen, of whom they aſked for Kool, or Kilduil. The fiſhermen pointed to the eaſt; and this was alſo the opinion of the Dutch crew. The fiſhermen threw them a ſtock-fiſh, but they could not pay them for it, being carried along too quickly by a ſtrong wind: they only made different ſigns to ſignify that they thanked them, remaining beſides ſurpriſed at the obliging manners of thoſe people.

At ſix in the evening they met with other fiſhermen, who ſailed towards them, and aſked where was their *crabbel*, that is to ſay, their ſhip? They gave for anſwer the two words which they had learned, *crabbel propal*, the ſhip is loſt: upon which the fiſhermen again cried out, *Cool brabante crabbel*, by which they conceived they would ſay that there were Dutch veſſels at Cool, or Cola.

On the twenty-fifth at noon they were in ſight of Kilduin, and between one and two came to the weſtern extremity of the iſland. The maſter immediately landed, where he found five or ſix ſmall houſes inhabited by Laplanders, of whom they aſked if that country was not Kilduin? They anſwered yes; and that there were three Dutch veſſels at Cola, two of which were to leave it that ſame day.

Upon this anſwer they again ſet ſail between four and five in the afternoon, with an intention to reach Wardhuis; but during their courſe the wind increaſed ſo that they could not keep the ſea during the night: they therefore paſſed behind two rocks and bore towards the land. They ſaw a little hut there, to which they repaired and found three men, who received them with kindneſs. They aſked theſe men if they could find a veſſel to go to Holland. They returned the ſame anſwer as the Laplanders, that there were three, two of which were on the eve of departure.

They aſked them if they were willing to go to Cool with one of the crew by land, and they would pay them well for their trouble. The Laplanders excuſed themſelves, ſaying they could not leave that place. Nevertheleſs they conducted the maſter with one of the ſailors over a mountain, where they met with other Laplanders, who engaged to conduct the ſailor, on their promiſing two reals of eight. Thus one of them having taken a firelock, and the ſailor holding a hook in his hand, they both departed towards morning.

On the twenty-ſixth they towed the two veſſels to land, and drew out what they had there to expoſe it to the air: they afterwards went to viſit the Ruſſians, with whom they warmed themſelves: they alſo dreſſed what they had to eat, and reſumed two regular repaſts every day, as having no doubt that henceforth they ſhould meet with men from time to time, and the moſt part of thoſe things for which they ſhould have occaſion. They drank alſo of the beverage of the Ruſſians, which they call *quas*, made of every ſort of old and mouldy bread, and which nevertheleſs they did not fail to find good, after having for ſuch a length of time drank nothing but water. Some of them having advanced farther into the country met with a kind of little fruit, of the colour of the

ſloe,

ſloe, which much reſembled black gooſberries, of which they ate, and found much benefit from them; for they perceived that theſe gooſeberries completed the cure of the ſcurvy.

On the twenty-ninth they ſaw on a mountain the Laplander returning to them, but without the ſailor he had conducted to Cola, which ſurpriſed them and cauſed ſome alarm. The Laplander being arrived gave a letter to the maſter, who having broke it open immediately found that the writer was extremely aſtoniſhed at his arrival at that place with his crew; that he believed them all loſt a long time ſince; that their return had given him the greater joy, as he had regarded their loſs as certain; that he would come very ſoon to meet them with all kinds of refreſhments. This letter was ſigned John Corneliſz Riip.

So agreeable a piece of news was received with great ſatisfaction. They paid the Laplander, and beſides made him a preſent of a pair of breeches, ſtockings, and ſome other clothes, ſo that he was quite clothed in the Dutch faſhion. This man walked ſo quickly that it was perfectly aſtoniſhing: they had conſtantly travelled for two days and two nights, in order to arrive ſpeedily at Cola, when they were both together; and at the return of the Laplander alone, he had only been twenty-four hours on his journey. The ſailors imagined there was a little witchcraft in the buſineſs: he gave them a partridge he had killed on his return.

On thirtieth they remained all day in anxious ſuſpenſe to know who this John Corneliſz was who had written. It occurred to them ſometimes that it might probably be the ſame John Corneliſz who had been in their company; but they afterwards rejected this idea, becauſe they could not believe he was living, in the ſame manner as on his ſide he could not believe they were ſtill alive. The hardſhips he had ſuffered, and would ſuffer, appeared to them ſtill greater than theirs, and they conſequently concluded he could not have ſupported them, and that he was certainly dead. At length the maſter looked for a letter that this John Corneliſz who had ſailed with him had formerly written, and finding it to be the ſame hand-writing, he no longer doubted he was ſtill alive.

In the mean time they ſaw a yawl ſailing towards the coaſt, and when it approached they recognized John Corneliſz, who was with the ſailor they had ſent to Cool. This was a meeting of perſons who had believed each other loſt, and who beheld one another as riſen from the dead. John Corneliſz brought with him a caſk of Roſtoc beer, wine, brandy, bread, meat, pork, ſalmon, ſugar, and ſeveral other refreſhments. On the laſt day of Auguſt they got ready and departed to proceed to Cola, after having returned many thanks to the Ruſſians, and having paid well for their lodging, ſetting ſail at midnight during the height of the tide.

On the firſt of September, at day-break, which was about ſix in the morning, they found themſelves to the weſt of the river of Cola, on which they proceeded, both rowing and ſailing at the ſame time, till midnight. On the ſecond they continued to aſcend the river, on the banks of which they had the pleaſure of ſeeing trees, and they imagined themſelves arrived in another world; for they had never yet met with trees in all the other places where they had landed. Between ſeven and eight in the evening they joined the veſſel of John Corneliſz. The meeting of the two crews was a new occaſion for rejoicing, the more ſo as that of Corneliſz had been in the voyage of the preceding year with the ſame maſter.

At duſk they entered Cola, and on the following day they unloaded their veſſels and landed to refreſh themſelves, after incredible fatigues, in order to recruit their ſtrength, and be in condition to complete the voyage to Holland. On the eleventh they obtained

obtained permiſſion of the governor, who was there on the part of the great Duke of Moſcovy, to have their veſſels conducted to the exchange, or warehouſe of the merchants, and to leave them there as ſacred, in order to preſerve the memory of ſo long and dangerous a voyage, made by a route till then unknown, and in ſmall veſſels without any covering, which had navigated nearly four hundred leagues along the coaſts and in the main ſea to Cola; at which the inhabitants of that city were in an aſtoniſhment which would have been difficult to expreſs.

On the fifteenth of September they came down the river in a bark to get on board the veſſel of John Corneliſz, which lay half a league from the town, and in the afternoon the veſſel alſo deſcended half way down the river and beyond the ſtrait. On the eighteenth they left the river and ſtood out to ſea, in order to proceed to Holland. On the following day, at ſix in the evening, they came before Wardhuis, where they anchored, becauſe Corneliſz had yet to take in there ſome merchandiſe.

On the ſixth of October, in the evening, they weighed anchor and left Wardhuis, and on the twenty-ninth of the ſame month they entered the Meuſe, ſailing with a E.N.E. wind. The following day they proceeded by land to Maaſlandt-ſluis, Delft, Haerlem, and on the firſt of November they arrived at Amſterdam, in the ſame dreſs they had worn at Novaya Zemlia, and with the ſame furred caps of foxes' ſkins: thence they proceeded to the houſe of Peter Haſſelaar, who was one of the directors for the city of Amſterdam at the time of the equipment of the two veſſels at that place; that is to ſay, the one of John Corneliſz, and that of the maſter who had been to Novaya Zemlia, and returned.

The return of the remainder of the crew of the loſt veſſel occaſioned much ſurpriſe to the people, who had thought them dead; and as the report quickly ſpread through the city, it came to the ears of the Chancellor of the King of Denmark, then his ambaſſador to Holland, while he was at table and dining at the Prinſhof *. The high bailiff of Amſterdam went himſelf with two other lords of the city to fetch them, and they made a recital before the ambaſſador and the burgomaſters of Amſterdam of their voyage and adventures; after that they retired. Thoſe who had dwellings at Amſterdam went to their houſes, and the others were placed at an inn, and their expences defrayed until they had drawn up their accounts and had been paid. They were in all to the number of twelve.

* The houſe where the counſellors of the admiralty aſſemble.

DISSERTATION OF THE LEARNED JOHN ISAAC PONTANUS, IN WHICH HE ANSWERS THE OBJECTIONS OF THOSE WHO CONSIDER THE SEARCH OF A NORTHERN PASSAGE AS A TASK OF TOO GREAT DIFFICULTY; AND IN WHICH HE PROPOSES THE MOST PROBABLE MEANS OF ACCOMPLISHING THIS DESIGN.

(Ibid. Vol. I. p. 254.)

THERE are ſome perſons who might object that what has been attempted is abſolutely impoſſible, that we have not been able to accompliſh it, and that moſt probably we ſhall never ſucceed. But I anſwer, that the ſame was formerly ſaid of the navigation to the Eaſt Indies, which at preſent is ſo happily practiſed by the Dutch and Portugueſe,

as we ſhall mention in its place. It was ſaid to be impoſſible to paſs twice under the line, that the hope was too ſlender, and the danger too great and certain. Theſe objections and ſome others did not diſſuade Emanuel King of Portugal from his deſign; and he completed the diſcovery of that courſe through the ocean, which a year before had been ſhewn by his predeceſſor to the Cape of Good Hope.

This prince having given the command of the fleet which he ſent to the Indies to Velaſco de Gama, who accepted it, this commander embarked in 1497 at Caliſmalis, or Cadiz.* He directed his courſe towards Arabia, doubled the Cape of Good Hope, made all the neceſſary diſcoveries, and arrived at the kingdom of Calicut. At his return he related in preſence of the King every thing he had performed. For beſides the teſtimonies of the ancients, they had entertained freſh hopes of ſucceeding in this navigation from the account of certain perſons whom the King had ſent to Alexandria, with orders to paſs from that place into Mauritania, which is above Egypt, whence they were to proceed towards Italy, in order to learn in all thoſe places from the moſt able perſons what route ſhould be taken, after having paſſed around the Cape of Good Hope, in order to reach the Indies.

With reſpect to the ancients, it is true it ſeems probable that the route by this Cape may have been unknown to Ptolemy; but Pliny expreſsly relates ſeveral circumſtances, from which it appears that the inhabitants of Cadiz formerly much frequented the parts on this ſide of the Cape: for he ſays, that when C. Cæſar, ſon of Auguſtus, waged war on the Red Sea, wrecks of Spaniſh veſſels were obſerved; and that during the flouriſhing days of Carthage, when its power was dreaded, Hanno having ſailed from Cadiz to the extremity of Arabia, had given a deſcription of that voyage. Beſides, it may be inferred from Cornelius Nepos, that this ſame route was alſo known to the Arabs: for he relates that in his time one Eudoxus, who fled from Lathyrus King of Alexandria, having returned by the Red Sea, paſſed to Cadiz; which is alſo preciſely mentioned by Pliny.

But we muſt finiſh this digreſſion, and return to our ſubject. If therefore the Portugueſe, from lending faith to theſe teſtimonies of the ancients, have met with a happy ſucceſs, why ſhall we pay no regard to what theſe ſame ancients have related of the navigation by the north? Their teſtimonies and the thing itſelf well deſerve that we ſhould make every imaginable attempt.

I paſs in ſilence what the chronicles of France and Denmark have ſaid of thoſe of Greenland; which chronicles of Denmark, Anſgarius, and after him Albert, miniſters of the goſpel, have publiſhed at Hamburg, though at preſent their name is ſcarcely known; but theſe things will appear in a new light, if they be compared with what has been related by Pliny already cited. This author tells us, on the faith of Cornelius Nepos, that formerly there was a famous navigation made by the north, and he advances this proof: that when Q. Metellus Celer was conſul with C. Afranius, being alſo governor of the Gauls, the King of the Suabians made him a preſent of ſome Indians, who being at ſea for traffic, had been forced by a tempeſt and caſt on Germany: he underſtands that part of Germany where the Weſer and Elbe diſcharge themſelves into the ſea; for we have demonſtrated elſewhere that the dominion of the ancient Suabians extended to that place. It may be conjectured that theſe Indians had parted from Cape Tabin, which is in the north of Tartary, and is called Mount Tabin by Pliny; and that they were of Serica, a neighbouring country, and where at preſent are the frontiers of Cathay, on the ſide of the Dead Sea, thus named, or Sea of Mar-

* This paper is only inſerted on account of its curioſity. Pontanus muſt have been a miſerable geographer.

mora, or Maramarusa, by the Cimbri, according as the same Pliny relates on the faith of Philemon; and that the tempest had carried them to the coasts of Germany.

If all these things be true, it will be found that the relation of the Samoiedes, which we have heretofore seen, is to be credited, and that it is of great importance, since it discloses that the Russians every year, taking their opportunity to sail to a certain cape, which they call Ugolita, beyond the river Obi, arrive there in five days by that same sea before it freezes; so that the voyages we would make by the north should be undertaken by this same route, which appears the most expeditious and sure, till better discoveries be made. We should follow the example of Emanuel King of Portugal, who, before equipping a fleet to proceed to the East, dispatched persons to reconnoitre the Red Sea, and the routes from that sea to the Indies, in order to know its nature, and the gulfs which might be there.

In the same manner if we would wish to pass the Strait of Nassau, or of Weigats, persons should be sent at the public expence, who taking the opportunity of the voyage made by the Russians every year, should join them in order to proceed in their company; by this means we should ascertain if the sea beyond the Weigats is the great sea of Tatary, or only a gulf, beyond which we cannot pass: we should know if Cape Tabin be always frozen, or if it be possible to sail beyond: we might, I say, be informed of all these things by the people inhabiting those climates, and who are acquainted with them.

In order to facilitate this enterprise, there should be dispatched a ship of war of the lowest rate, and not so much attention paid to man it with a strong crew, as to compose the crew of officers and sailors already accustomed to sail in those climates. This vessel should be stored with provisions for a year, or even a longer time, and when arrived at the strait, the place should be chosen which might be judged the most proper to winter in, from which there might be communication with the Russians and Samoiedes, and where they should wait the time of the passage of the Moscovites. It would be well also that some of the Dutch who trade to Japan should come by that side to Cape Tabin, or at least to the places which are the most neighbouring, and observe the route and the country. These are the most certain, and without doubt the only means, which can be put in practice to clear up this great mystery, that is, whether vessels may there meet with a passage.

I am aware that others are of opinion it would be surer to direct the course through the main sea, and to sail around the northern coast of Novaya Zemlia, to the latitude of 82° or thereabouts, because the days and the summer are longer there, the ice not so frequent, nor in such quantity along the coast; and in fine, because the cold there is less severe than in lat. 76°, and below. I admit that all these things are thus on the globe, which is extremely inclined and curved in this latitude, and which raises the sun on the horizon for nearly six months. Nevertheless there are two reasons why this opinion should not be received. The first, that we have no knowledge of that climate, neither if it be all sea, or if there also be lands and islands. In the second place, supposing it possible to navigate there, the difficulty still remains the same; that is to say, that it is necessary to descend from the latitude of 80° to the latitude of 70°, and below, and there to suffer the inconveniences and the rigour of the cold and mountains of ice, in the midst of which we should find ourselves; to remain separated from all communication with men in unknown countries; to be deprived of the brightness of the sun, to contend with wild beasts; and finally, according to all appearance, miserably to perish.

To this has been reduced the success of the voyages which have been undertaken to the present time. The first of those who visited the northern coast of America, was

Nicolas Zenetus,* who, in the year 1380, after having been driven here and there, loſt the hope he had conceived. In 1500 Gaſpard Corteſius, inſtead of the ſtrait he ſought, met with a river, and having been obliged to return, he again undertook the ſame voyage the following year and periſhed; and his death was ſoon after followed by that of his brother Michael, who periſhed in the ſame reſearch. Sebaſtian Cabot, a Venetian, having been ſent, in 1506, by Henry VII. King of England, alſo to ſeek a northern paſſage, was impeded by the ice, and returned without ſucceſs. John Varaſcenus having ſailed there in 1524, in the name of Francis I. King of France, who was prepoſſeſſed with the ſame deſign, landed at Cape Britain, where he and his crew were devoured by the ſavages. Sebaſtian Gomeſius, a Spaniard, took this ſame route in 1525, and all the honour he acquired was to bring away ſome ſavages.

After this the Engliſh having formed the ſame deſign, Sir Hugh Willoughby, in 1553, arrived in lat. 72°, where from the cold and other inconveniences, he and his whole crew periſhed. Three years after Stephen Burrough took the ſame route, and diſcovered the iſles of Galgoievia, Novaya Zemlia, and ſome others; but having already experienced the ſeverity of the cold of this climate, and foreſeeing the conſequences, he departed in time and returned. Afterwards Martin Frobiſher, Arthur Pet, Charles Jackman, and John Davis, of the ſame nation, made the ſame attempt without ſucceſs. Frobiſher, in 1576, returned on account of the ice; Pet and Jackman experienced the ſame fate in 1580, except that they more diſtinctly obſerved the coaſts of Novaya Zemlia. In 1585, Davis diſcovered a gulf, but to the preſent time the extent has not been aſcertained. Finally, the Dutch in our days having rendered themſelves famous in the art of navigation by their voyages and diſcoveries, were alſo willing to contribute to this laſt, and have acquitted themſelves with honour, though they have failed; for we have ſeen above the ſucceſs of their enterpriſe. Thus I do not ſee that this route can be completely diſcovered, unleſs by the means I have juſt pointed out.

* He ſpeaks of the fabulous voyage of Nicholas Zeno

A JOURNEY

A JOURNEY THROUGH FLANDERS, HOLLAND, &c.

BY M. REGNARD.

[Newly tranſlated from the Stereotype edition of the Works of this celebrated comic Poet. Paris, 1801. Tom. v.]

WE left Paris in the Bruſſells' diligence on the twenty-ſixth day of April, 1681. I intended to ſleep at Senlis, where I expected to find M. de Fercourt, who had ſet out from Paris three days before. All our fellow-paſſengers were young men, the eldeſt of whom was below twenty-eight years of age; five of them were Dutchmen, one of whom was M de Waſenau, captain of the Prince of Orange's guards: we had alſo in our company a little Spaniſh abbé, who was going to take poſſeſſion of a petty canonſhip at Bruſſells. This little prieſt, humph-backed and humph-breaſted, was a ſource of entertainment to us during the whole journey. We went next day to Pont, where we dined, after which we travelled to ſleep at Gournai, where the reſidence of the preſident Amelot is ſituated: the chateau is ſurrounded with water, and the garden is interſected with various rivulets, which add conſiderably to its beauty. We left this place early in the morning, that we might be enabled to reach and ſleep at Peronne, which is called La Pucelle, on account of its unſhaken fidelity to the royal cauſe during the civil war. It is a ſmall town, but extremely ſtrong on the ſide by which it is entered, on account of marſhes, which render any approach to it difficult, and which form a number of large and deep ditches, occaſioning a thouſand windings before the city can be arrived at. The river Somme laves its walls, and defends it on the ſame ſide, ſo that the place is almoſt inacceſſible. Theſe ditches produce excellent carp, which are famous throughout all France, as well as numbers of ducks, the pies made of which are equally eſteemed. The diſtance from Peronne to Cambray is ſeven leagues. While we were on the road we were attacked with ſuch a violent ſtorm that our horſes, frightened and blinded with conſtant flaſhes of lightning, which created day in the midſt of darkneſs, overturned the coach in a deep ditch, where, in conſequence of the violent fall, we were in danger of ending our days; but fortune ſo ordered matters that not one of us was wounded: we eſcaped with being completely drenched in water; and after we had been angled and drawn like fiſh from the coach, nearly in the ſituation of thoſe who come out of a mine, in which they had been immerſed to the ears, we were obliged to travel a league and a half on foot to Cambray, which, as may eaſily be conceived, we entered in a very dirty and diſagreeable condition.

This city by no means deſerves the renown which it has acquired in France: it is only formidable by the miſchief which its garriſons have done to our peaſantry; and I am aſtoniſhed at the diſturbance which it excited before it was taken by the greateſt of kings. The fact is, Cambray of itſelf is of no importance; it is the caſtle only which is capable of making any defence, and the city had no ſtrength but what it derived from its protection; and the works which are now carrying on at this place furniſh a convincing proof that there is no intention of immediately giving it back; and that the Spaniards who believed it ſo ſtrong, that they ſaid, "If the King of France wiſhes to take Cambray, he muſt build one," have now taken leave of it for ever. This fortreſs, ſo famous throughout the world, was begun by Charles the Fifth, and has been increaſed by many fortifications, which render it a very reſpectable place: its walls are aſtoniſhingly high, owing to the great depth of the ditches; but they are not on this account the ſtronger, as they are almoſt wholly undermined. We were conducted every where

by an officer, who with pleaſure ſhowed us every thing worthy of obſervation, and pointed out to us the breach by which the Spaniards eſcaped. The city contains nothing remarkable, except the ſpire of the cathedral, which has been lately built with ſurpriſing delicacy of taſte. We lodged at the Raven, and were very ill accommodated, owing to the number of ſtrangers at this place.

From Cambray to Valenciennes the diſtance is not greater than from Peronne to Cambray. Valenciennes is ſituated upon the Eſcaut, and they are fortifying it in ſuch a manner as to render it impregnable. We obſerved carefully the place by which it had been taken, and the gate through which the muſketteers entered. This gate is conſtructed like a gate of vaulted iron, and had communication with a glacis; it had not been open for twenty years, and it was only ſo at this time for the purpoſe of carrying in the body of the major, who had been wounded during an attack which had been made on this ſide: the muſketteers, for whom it aſſuredly had not been opened, purſued the enemy, and finding this entrance, continued their way; and notwithſtanding a ſhower of bullets, puſhed on to another gate, the portcullis of which not having been uſed for a long time, it was found impoſſible to ſhut, and they made themſelves maſters of the city. We entered the fortreſs, and as we had a kind of a prieſt with us, they gave us two ſoldiers as conductors. It is known that there is nothing Spaniſh in this country but the diſpoſition of the prieſts; and they are carefully and cautiouſly watched, to prevent them from engaging in any improper enterpriſe. We obſerved that all the females in this country were handſome. In travelling from Valenciennes to Mons, it is cuſtomary to dine at Reverain, a place worthy of attention, both on account of the reſidence of our armies, and of its being the ſpot which ſeparates the territories of France and Spain: we arrived in good time at the city, and had ſufficient leiſure to view it with attention.

Mons is the capital of Hainault, and the firſt town under the dominion of Spain on this ſide; but it remains ſo only until it pleaſe France to take it under her protection: it may be conſidered one of the ſtrongeſt fortreſſes of the Low Country, on account of its ſituation, being ſurrounded with marſhes. The burghers form its garriſon, and we ſaw them mount guard in the great ſquare, which is extremely handſome. The Prince of Aremberg, a Spaniſh nobleman, who is alſo Duke of Arcot, and of the firſt family of the Low Country, is governor. That which gratified me much in Mons, and which is ſingular enough, was the royal college of Canoneſſes, founded by a ———, who eſtabliſhed this community for the reception of ladies of quality, who remain here until they leave it for the purpoſe of being married. Theſe ladies perform the ſervice with peculiar gracefulneſs: they have one dreſs in which they attend church in the morning, and another in which they viſit the city in the evening, when they attend the beſt company, and are perfectly well received, on acccunt of the gallantry which they profeſs. We aſcended the great tour, from whence we viewed the whole city, and where we alſo ſaw an excellent chime of bells, which the Dutch and Flemings are very fond of.

After leaving Mons, we intended to ſleep at Notre Dame de Halle. This place of devotion has been, in common with others, much abuſed by the armies encamped in its neighbourhood, which have had no regard for the reverence which all Flemings feel for this church, dedicated to the Virgin. We obſerved on leaving Mons the ſpot where the famous battle of St. Denis was fought, on the evening previous to the proclamation of peace in the army, and at the time when the Prince of Orange had in his poſſeſſion the articles of peace actually ſigned: we were accompanied by an officer who was preſent at the engagement, and who ſhowed us the poſts and poſitions which the two armies occupied. The battle is alſo denominated that of Caſſiau, which is the appellation of a little village oppoſite to that abbey, whoſe name diſtinguiſhes this engagement.

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We at length arrived at Bruſſells, the ſecond city of Brabant: it is extremely agreeable, and very populous, as it is the ordinary place of reſidence of the governors of the Low Country, and conſequently of a number of men of quality who attend the court; on this account it is called *The Noble*. The governor's palace is the fineſt building in the city, both on account of its ſize, and of the fine park which ſurrounds it, ſerving as an agreeable promenade to all the inhabitants, and delighting the ſight by the number of fountains which it contains. The Prince of Parma is the preſent governor: he has placed the militia on an excellent footing, re-eſtabliſhing it by great levies made upon the people, who have not been extremely well pleaſed with the meaſure. The town-houſe is a curious ſtructure: it was erected by an Italian, who hanged himſelf with vexation, as his epitaph informs us, becauſe he had neglected to place the tower in the middle. This man performed that office for himſelf which a hangman ſhould have done; for he deſerved no better than a cord, for having been deficient in a point which men the moſt ignorant of architecture would by no means have neglected. The churches of Bruſſels, like thoſe of the Low Country, are very handſome, and kept in excellent repair. We ſaw in the collegiate church, called St. Gudule, three miraculous hoſts, on which we were told that ſome ſpots of blood could be diſcovered. We went to ſee the ſociety of Beguins, which is a peculiar order in this country: they are clothed in white when at church; but they walk through the ſtreets in a long black cloak, which covers them from head to foot: they have alſo a little cap on their heads, which forms a very handſome dreſs; and I obſerved girls in this religious habit whom I ſhould have loved in preference to many others ſhining in gold, and ſparkling with diamonds. At this time there were eight hundred at Beguinage.——The court of faſhionables here is the ſame with the court among us: here all the ladies and cavaliers are to be met with; but there is this difference, however, that all the ladies are here on one ſide, and the gentlemen on the other. We paſſed three days very pleaſantly at Bruſſells, and after having ſeen every thing worthy of obſervation in the city, we ſet out on the ſixteenth day of May by the canal which communicates with Antwerp; but by which we only went to ———, where we left the boat, for the purpoſe of taking coaches to Malines, which we wiſhed to ſee before our arrival at Antwerp.

Malines is termed *The Beautiful*, and not without reaſon; for it appears to be rather a painted than a real city, the buildings being regular, and the ſtreets handſome and well paved. It is to this parliament, the firſt of the Low Country, that every proceſs which is appealed is referred; and this circumſtance renders the city celebrated. This province is diſmembered from the reſt of the Low Country, and forms a marquiſate by itſelf. All the common people work, as is the cuſtom throughout Flanders, at the manufacture of white lace, which bears this name; and Beguinage, which is the largeſt and moſt valuable of them all, is only ſupported by the labour in which the Beguins are engaged, and in which they excel. The Beguins are religious girls or women, who retire to this place as often as they think proper; they have each a little houſe to themſelves, where they receive the viſits of their relations; there are even ſome of them who take boarders. The place is called Beguinage, and the gates are ſhut early in the evening. There is at Malines a tower remarkable for its height, which commands a moſt extenſive proſpect. From Malines, where we dined, we were to go in the evening to Antwerp in coaches, which travel every day at a certain hour, and by the moſt charming and beautiful road which I have ever ſeen.

Antwerp, the capital, and the moſt extenſive city of Brabant, and to which one might give titles ſtill more reſpectable, ſurpaſſes all the cities I have ſeen, Naples, Rome, and Venice excepted, not only by the magnificence of its buildings, the pomp of its churches,

and

and the ſize of its ſpacious ſtreets, but alſo by the manners of its inhabitants, the moſt polite of whom endeavour to imitate the French manners both with regard to dreſs and language, which they are proud of poſſeſſing in perfection. That which firſt excited our admiration in entering the city was the beauty of its ſuperb ramparts, which, covered with trees, form the moſt delightful walk in the world: they are wholly covered with freeſtone, and waſhed by a ditch of running water, which ſurrounds the city, and which equally ſerves to embelliſh and defend it. The cathedral is well built, and the ſteeple, of Engliſh workmanſhip, is ſurpriſingly handſome; but it may one day prove the ſource of vexation to the city. There are here ſeveral excellent paintings, and among others a deſcent from the croſs, by Rubens, which is reckoned a maſter-piece.

The church of the Jeſuits is not inferior in magnificence to any which I have ſeen in Italy, and is as ſuperb, as the marble with which it is built has been conveyed from a conſiderable diſtance, and at a great expence: the whole roof is covered with pieces, from the hand of the greateſt maſters. It is eaſy to judge of the magnificence of this church, when it is ſtated that the marble rail alone which guards the chief altar coſt more than forty thouſand livres: and I do not believe it poſſible to behold a more finiſhed piece of ſculpture; the marble is ſo delicately rounded, that it ſeems to have forgotten its native hardneſs for the purpoſe of aſſuming that form which the workman wiſhed to give it, and to yield like wax to the dictates of his will. The fortreſs, famed through all Europe for its regularity, has five baſtions: it is larger, ſtronger, and incomparably better built than that of Cambray. Its glacis is extenſive and ſpacious throughout, and ſuperior in this reſpect to that of Cambray, which can be very nearly approached while under cover; which circumſtance tended not a little to facilitate its capture. We were conducted hither by M. de Verproſt, and carried every where by an officer, who would not allow us to walk upon the baſtions. We ſaw the place where the Dutch attempted to take the city by ſurpriſe, where they deſcended by night in the river, and attempted to paſs the ditch by means of little boats, which every man could carry upon his ſhoulder; but the centinel hearing a noiſe gave the alarm, in conſequence of which the Dutch, diſappointed in their expectations, retreated and left all their boats and inſtruments, which are ſtill kept in the citadel, and which were ſhewn to us as ſymptoms and monuments of victory.

We embarked at Antwerp for Rotterdam. We had Zealand on the left, and paſſed in ſight of Bergen-op-Zoom, which belongs to the Count of Auvergne. We were three days on our voyage, and paſſed the Brille: this place excited conſiderable diſturbance during the troubles in Holland, which happened about a century ago.

During the reign of Philip the Second, ſon of Charles the Fifth, the Seven Provinces were governed by ———, ſiſter of Charles, and conſequently the King's aunt. Philip, to whom they belonged, wiſhed to levy ſome new taxes from the people, and to eſtabliſh the inquiſition among them. The Dutch placed themſelves in oppoſition to the new declarations, and the Prince of Orange, ſupported by Count Horn, and by ———, at the head of the populace, remonſtrated to the governeſs, and propoſed two hundred articles, reſpecting which they requeſted ſatisfaction. This lady, ſurpriſed at the tumult, turned round to one of the chief men of her council, who told her, in deriſion, *that ſhe ought not to give herſelf any uneaſineſs about a ſet of* BEGGARS. This ſaying being reported to the mutineers, they became ſo enraged that they eſtabliſhed a party, which has ſince been diſtinguiſhed by the name of *The Beggars*. The governeſs, however, returned to Spain, being conſcious of the factious diſpoſition of the inhabitants of the Seven Provinces, and not wiſhing to ſhew them that ſhe could not conſent to a part of the articles which they propoſed: this led Philip the Second to ſend the Duke of Ava, who afterwards

wards ſhed ſo much blood, and produced the complete rebellion of the Provinces: it is ſaid that he deſtroyed, by the hands of the executioner, more than eighteen thouſand perſons. He convoked the States at Bruſſells. Count Horn, not wiſhing to appear ringleader of the mutiny, went thither; but the Prince of Orange, fearing the Spaniards, whom he diſtruſted, left the States that he might not be obliged to attend. Count Horn meeting accidentally the Prince of Orange, who abſented himſelf, "*Farewell*, (ſays he) *Prince without territories:*" to which the Prince replied, "*Farewell, Count without a head:*" which was afterwards found to be true; for being arreſted at the meeting of the States, they cut off the Count's head, together with thoſe of an almoſt countleſs number of individuals, who were ſuppoſed to belong to his party, or who were ſuſpected to do ſo, it being treaſon in the opinion of the Spaniards, to be an object of ſuſpicion to the King. The Prince of Orange, being ſenſible by the death of Count Horn and his adherents that he had acted with proper prudence, wiſhed ſtill to conſult his ſafety, and ſtrengthening the party of the factious, he put himſelf at their head, and after many battles, in which he was continually worſted, he at length took the Brille, from which the Duke of Ava, endeavoured, in vain, to expel him. This gave occaſion to the pictures made of him, in which he is ludicrouſly repreſented with ſpectacles on his noſe, *Brille* in Dutch ſignifying ſpectacles. Holland is divided into ſeven United Provinces, which are denominated Guelderland, Holland, Zealand, Utrecht, Friezland, Overyſſell, and Groningen.

We arrived at Rotterdam at midnight, and were obliged to go over the walls, that we might enter the city, as the gates were ſhut. This city is the ſecond of the whole country; and it is eaſy to judge of its richneſs by the number of veſſels, which are to be ſeen here from every country, and which fill the canal of the city, though it is extremely large. This city is remarkable for the extent of its commerce, as well as the beauty of its houſes, which are poſſeſſed of all that neatneſs ſo characteriſtic of all the cities of Holland. The ſtatue of Eraſmus is placed in the middle of the great ſquare: he was born in this city, and certainly deſerved from the republic, a ſtatue in bronze upon the bridge which is ſituated in the middle of the ſquare. We left Rotterdam, at two o'clock of the afternoon, in boats, which are extremely commodious in all parts of Holland: they ſet out, every one at different times, and half an hour after each other; in conſequence of which, ſome of them depart every half hour both of the day and the night for a hundred different places; and, ſo punctual are they, that the horſe is yoked to the boat, as ſoon as the hour is ready to ſtrike; and before it has fully ſtruck the horſe ſets off. We travelled to Delft, a little village at the diſtance of two leagues from the Hague, where we ſaw the brother of one of our friends whom we had left in ſlavery at Algiers. We entered the principal church of the city, and viewed the tomb of the famous Admiral Tromp. In the evening we arrived at the Hague, which is the fineſt village in the world: it is the Prince of Orange's ordinary reſidence. He was not here at this time, but had gone to a great hunt in Germany, upon the lands of ——— with the ———

The Prince of Orange is denominated William the Third of Naſſau. The late wars have rendered him popular in Holland, and he has, conſequently been declared Stadtholder, Captain-General of the Armies belonging to the United Provinces of the Low Country, and Grand Admiral. The States allow him the ſum of a hundred thouſand francs per annum, beſides defraying the expences of his private eſtabliſhment. Some individuals wiſhed him and tried to entice him, to declare himſelf King of Holland while he was abſolute maſter of the troops. But thoſe who had more wiſdom pointed out to him, not only the difficulty attending the execution of this project, but the impoſſibility of maintaining

the ſovereignty even were he fortunate enough to acquire it. They argued that Holland would be completely and ſpeedily deſtroyed, if it became the property of a maſter, and ceaſed to be a republic, and that on account of the great expence which would be conſtantly required for the preſervation of the country; that a prince would be obliged to raiſe large ſums upon his ſubjects, which whilſt they were indulged with the title of freemen, they would pay with pleaſure, as all they gave, was for the general good; it is on this account, that no country is more harraſſed by taxes and impoſts than Holland; and the people flatter themſelves, that, as it is they who impoſe them, they have it in their power to refuſe them whenever they pleaſe. This counſel, the moſt prudent and politic, was followed by the Prince of Orange, who found his account in it.

The States of Holland hold their ſittings at the Hague, which is the chief cauſe of its magnificence. The houſes of ſome individuals are very beautiful, but the palace of the Prince has nothing in it remarkable. On the contrary it is ſurpriſing to ſee him ſo indifferently lodged, whilſt ſome merchants dwell in far grander manſions. We ſaw the chambers of the States, one of which is handſome enough, and which M. Del—— ſaid, he would undertake to gild for two thouſand crowns, though according to the general calculation, it coſt more than ten thouſand crowns of gold; but, he added, he underſtood that they had furniſhed it for him. M. Davaux was here, at this time, ambaſſador. We ſaw him in mourning on account of the recent death of the Chevalier M. Meſme, his brother-in-law whom I have ſeen at Rome, and who had been lately killed by the ſtroke of a ſtone.

On leaving the palace, we viewed a gate in the neighbourhood of the houſe of M. De——, the place where the murder of Penſionary De Witt happened, who was deſtroyed by the populace, at the commencement of the war. This took place at the inſtigation of the Prince of Orange, who was diſpleaſed with him for publiſhing an edict, which had been iſſued a ſhort time before, forbidding the people to recogniſe the Prince as their Sovereign, which it was their wiſh to do.

Prince William of Naſſau, who was at the head of the patriots when they threw off the Spaniſh yoke, behaved ſo generouſly during the whole of the war, that the Dutch, after the Spaniards had been obliged to recogniſe them and their Republic as independent ſtates, were forced to reward his valour by conferring on him the title of Protector of the States. This title is enjoyed by his ſucceſſors. But the council of the provinces, and eſpecially the De Witts, who compoſed a particular faction, and who were encouraged by many others, publiſhed that perpetual law, by which it was declared illegal ever to propoſe the Prince of Orange as Sovereign, and even obliged the preſent Prince, while young to ſign it. During theſe tranſactions, war with France commenced; and the people dreading the French yoke, and believing, that, if they had the Prince of Orange at their head, they would perform wonders, propoſed him. But being prevented by this perpetual edict, they broke out againſt De Witt, the general of the forces, and cauſed him to be arreſted, accuſing him of high treaſon, and of wiſhing to overturn the government; but, finding no evidence ſufficient to convict him, they contented themſelves with baniſhing him, for the purpoſe of ſatisfying the people and the faction of the Prince of Orange. His brother penſionary at the Hague for the affairs of the province of Holland, demanded permiſſion to viſit him; but, in endeavouring to enter the priſon, the people mutinied, ſuffering with impatience the ſight of a man who oppoſed their ſchemes, fell upon him, and barbarouſly aſſaſſinated him on the ſpot. They drew him to a little diſtance, where they hung him by the neck. Every body crowded to this ſcene, and ſo enraged were the people,

that they cut the body in pieces, and took away with them lumps of fleſh, which they ſold ſome days afterwards, at a high price, to thoſe who had not enjoyed the ſatisfaction of being preſent at this maſſacre. The people, who are ferocious brutes, delighting always in extremes, becauſe deſtitute of reaſon, and either too timid or too raſh, have already repented of this action. They are ſenſible, that the law was made for their intereſts; and the Penſionary's death was the firſt check which the Republic received.

The United Provinces are indebted, under heaven, to the Princes of Orange for their liberty, who forced the King of Spain to ſign the treaty, and to recognize the Dutch as a free people, independent of every other, which is a very remarkable circumſtance. William the Firſt cemented with his blood, the foundation of the Republic. Maurice and Henry, his ſons, advanced its glory, by being conquerors in ſeveral engagements. William the Second, not inferior to the reſt, died very young, and left as the ſucceſſor of his virtues William the Third of the ſame name, the preſent Prince of Orange, ſon of William the Second, and Mary Stewart, eldeſt daughter of Charles the Firſt, King of England, who was beheaded. In the thirty-ſixth or thirty-ſeventh year of William the Second's age, William the Third was born, who has ſince married the daughter of the Duke of York. He was not born till after his father's death, and he was, when eleven years of age, deprived of the Princeſs Royal his mother, who died at London, of the ſmall-pox, the ſame diſeaſe which had carried off her huſband, William the Second.

It is known to all the world, that Holland is a ſtate purely republican; but it will be proper to ſay ſomething more particular reſpecting its government.

Every city is governed by a magiſtrate, burgo-maſters, and counſellors, beſides a bailiff, in criminal cauſes, who diſcharges his office at the will of the council, and who determines abſolutely, in criminal affairs, of the ſentence of the burgo-maſters. Above a certain ſum, an appeal may be made to the provincial court, to which every city ſends a councillor.

The deputies from the cities compoſe the States of the Province; and the deputies from the Provinces form the States General, who enter into alliances, form treaties, impoſe taxes, and attend to the general intereſts of the republic. The Provinces have all equally the ſame influence; but the Province of Amſterdam generally ſways the balance, and influences the deciſions, according to its wiſh. That city alone is conſidered a province. It is a natural concluſion that the ſovereignty is not reſident in the States General, who conſiſt ſolely of envoys from the cities for the purpoſe of propoſing in the counil, thoſe matters which they wiſh to be conſidered.

The Hague is the place where the Dutch nobility reſide, and it is, perhaps, the moſt charming reſidence in the world. A large foreſt of tall trees, bounded on every ſide, by magnificent palaces, and ſurrounded by extenſive and beautiful meadows, renders its appearance one of the moſt pleaſant in Europe. Before the Stadthouſe, there is a pond ſurrounded with pieces of hewn ſtone, while large trees on its borders adorn the palace of the Prince. One can travel in a quarter of an hour from the Hague to the ſea, by a charming road. In going thither, we ſaw a chariot with ſails, which the Prince of Orange had cauſed to be conſtructed, and we went into a place, where they ride round a ring on wooden horſes. We went to view a reſidence of the Prince where he paſſes part of the year, and maintains a number of curious beaſts. We alſo ſaw ſome cows from Calicut, of a peculiar ſtructure, with bunches on their backs, beſides a number of ſtags. We left the Hague, and dined at Leyden, which is called *Lugdunum Batavorum*, and which is reſpectable on account of its univerſity, its anatomical preparations, and the propriety of its buildings; it is in my opinion, the moſt

reſpectable of all the Dutch towns. We ſaw here a number of curioſities, and among others, a hippopotamus or ſea-cow, which had been brought from India. In the anatomical muſeum they ſhow a quantity of preparations, ſo numerous, that a catalogue of them would be ſufficient to fill a large volume.

From Leyden we travelled to Amſterdam and ſaw Haarlem on the road, where we obſerved a large church: we arrived at Amſterdam in the evening. This city of cities, ſo renowned throughout the whole univerſe, may well be conſidered a maſter-piece. The houſes are magnificent, the ſtreets ſpacious, and the canals extremely large, with their banks fringed with trees, which mixing their verdure with the various colours with which the houſes are painted, form one of the moſt delightful ſcenes in the world. The city appears double. One can ſee it in the water, and the reflection of the palaces in the canals renders this place a charming reſidence. The town-houſe is ſituated on the dam; this ſtructure might have been reckoned one of the fineſt in Europe, if the architect had not been deficient in the plan, and had made ſome diſtinction betwixt the windows and the entrance, which it is neceſſary to look for on all ſides, and often to enquire for. We aſcended the ſtairs of the building, where we ſaw a magazine of arms, and a very fine chime of bells. From the ſpire, we obſerved Utrecht, which was the place that bounded the conqueſt of the King. The houſe of correction is one of the moſt uſeful eſtabliſhments I know, it contains all the females of infamous character, who are ſhut up in it, for a certain time, and obliged to work. Perhaps there is no town in the world, Paris excepted, where there is ſo much debauchery, as in Amſterdam. However, there is this difference between them, that in this city, there are certain diſtricts, where bawds reſide, and maintain, in their houſes, a certain number of girls. The gentleman is ſhown into a chamber, which has a communication with a number of ſmall ones, of which he pays for the entrance. The portrait, and the price of the lady which the chamber contains, are fixed above the door; the choice is left to the gentleman; but the lady will not venture out till the price is paid, and if the portrait has flattered, ſo much the worſe for him.

The work-houſe is another receptacle for vicious perſons and children, whoſe parents have been unable to reclaim them, where they are employed to grind cinnamon. There is in the great church of Amſterdam a chain of immenſe value, on account of the excellence of its workmanſhip. At Amſterdam, and throughout Holland, all kinds of religions, except the Catholic are tolerated; this exception is an example of their good policy, as they are convinced, that if ever the Catholics acquired power, it would be a great check to their liberty, and might prove its deſtruction. One ſees here, Lutherans, Calviniſts, Armenians, Neſtorians, Anabaptiſts, and Jews, who are more powerful in this place, than in any other country: Their ſynagogue here is infinitely ſuperior to that of Venice. The India houſe, which is without the city, ſhows clearly, that it belongs to the richeſt merchants in Europe. They were building here a very fine ſhip, which was to ſail for India in a month. We went to ſee their ſhips of war, which had no very reſpectable appearance, and I did not diſtinguiſh one, which was equal in beauty to our own. They diſapprove of quarter-galleries, which are frequent with us, and ſuppoſe that they obſtruct the ſhip's motion, but this addition, ſo far from being any diſadvantage, is, I find, extremely uſeful to the officers, and ornamental to the veſſel. At Amſterdam, we lodged at Chelſier's, at the *Place Royale*, in *Kalverſtraat*. We knew M. de Reſwic, who is deſcended of one of the firſt families in Holland, and who in the late wars, expended large ſums of money. He ſhewed Miſs Hornia, his miſtreſs, heireſs to a very fine fortune, and, like him, a Catholic. We ſaw them together at the opera, at the re-

preſentation of the rape of Helen. We were informed at the comedy that the whole ſum received is given to the poor, and that the city pays the comedians, who receive a certain ſalary.

We left Amſterdam, on the twenty-fifth day of May 1681, and arrived at Enchuyſe in the evening, where we only ſtaid while we took a refreſhment. We obſerved, that this city has three herrings upon its arms, on account of the great numbers which the inhabitants catch of this fiſh. We hired a boat in the evening to Workum, where we arrived next morning. This province is called North Holland, and I do not believe there are finer women any where, than what are here to be met with. The peaſant-girls poſſeſs charms not inferior to thoſe of the ancient Romans, and they are ſufficient to inſpire love at firſt ſight.

We arrived at Lewarden, the capital of Frieſland, a very handſome town, which choſe the Prince of Naſſau for its governor, not wiſhing to vote for the Prince of Orange. This Prince is about twenty-five or twenty-ſix years of age. He loſt his father about eighteen years ago, at the ſeventh year of his age. This Prince died in conſequence of an unluckly accident: a piſtol, which went off accidentally, at once deprived Europe of a great man, and Frieſland of a generous governor. He left behind him, a widow illuſtrious for her birth and her merit, Albertine of Orange, daughter of Prince Henry and Amelia de Solmes. The Prince ſurvived ſeven or eight days after the accident, and the people of Frieſland out of gratitude for the good conduct of the father offered the government to his ſon, who was at that time extremely young, and appointed him no other governor, than the Princeſs his mother.

We left Lewarden, and having travelled the whole night, we arrived by day-break, at Groningen, a city very pleaſantly ſituated, and which became famous in the late war, for the ſiege which it ſuſtained againſt the biſhop of Munſter, who inveſted it at thr head of twenty-four thouſand men. But the excellence of its fortifications, and the courage of its inhabitants forced the beſiegers to abandon their works after a ſiege of ſix weeks, during which, they loſt a great number of men. From Groningen we travelled to Oldenburg, which belongs, at preſent, to the King of Denmark. This city has given its name to the whole county. Two years ago, it was deſtroyed by lightning: they are beginning to rebuild it, and the King of Denmark is rearing ſome fortifications. They have here a horn of plenty, which has given riſe to the ſtory of a woman, who riſing out of the earth, preſened herſelf to the Count of Oldenburg, with this horn in her hand, full of a liquor which he was unacquainted with. The Prince was then at the chace, at a diſtance from his people, and much exhauſted. But being ignorant of this liquid, and ſeeing an extraordinary woman, he would not touch it, but poured it upon the buttocks of his horſe. The ſtrength of this liquor carried off all the hair from the places it had touched.

The King had departed from Oldenburg for Copenhagen only two days before our arrival. On the ſame evening we arrived at Bremen, a republic whoſe territories are ſurrounded with thoſe of Sweden and Denmark. The city is handſome, but of ſuch ſmall extent, that the walls almoſt touch the territories of their neighbours. From Bremen we ſaw nothing remarkable, till we arrived at Hamburg; and we were five days and five nights conſtantly travelling in their poſt waggons, before we finiſhed the journey. From Hamburg to Amſterdam, the diſtance is calculated at ſixty miles, which amount to a hundred and thirty French leagues.

Hamburg is a Hanſeatic town, free and imperial, which from its excellent militia and regular fortifications, has nothing to fear from a number of Princes, who are very

anxious to poſſeſs this rich treaſure, and particulary, the King of Denmark, for whom it is very conveniently ſituated. This Prince blockaded it during the late wars with five and twenty thouſand men; but ſeeing the number of auxiliary forces which arrived from all quarters, he could do nothing more. He reſigned, a ſhort time after, for the ſum of two hundred thouſand crowns, all his pretenſions to this city. It is governed by four burgo-maſters, and eighteen councillors. The ladies here are very handſome, and cover their faces, according to the Spaniſh faſhion. The Lutheran religion is profeſſed here, where they have a hollow pine a hundred years old. Their operas are pretty well repreſented, and I found that of Alceſte excellently perfo-med.

The whole country is excellent, and very fertile. Their carriages are extremely convenient, and the horſes are excellent, and run continually.

JOURNEY TO DENMARK.

FROM Hamburg, we ſet out for Copenhagen, which is about a hundred and twenty leagues diſtant from it. At Pinnenberg, three miles from the city, we ſaw the Queen mother of Denmark, who was going to the waters of Pyrmont with Prince George her ſon, and younger brother of the King. From Pinnenberg, we proceeded to Iſſoe, Renſburg, Flenſburg, Aſſen, Niebury, Caſtor, Rochild. The latter was formerly the reſidence of the Daniſh Kings. Their tombs are ſtill to be ſeen here; that of Chriſtian the Firſt is beautiful. We ſaw the model of his ſtatue, and it was with difficulty that I reached up to it.

The Queen mother is of the houſe of Lunéburg. She went to the camp to ſee the young Queen, with whom ſhe is by no means on a friendly footing; and ſhe would not receive the viſits of the ambaſſadors, becauſe they viſited the young Queen before her.

All the above-mentioned towns are handſome: the women carry all kinds of baſkets made of very fine twigs, upon their heads. At Aſſen, I loſt a portmanteau.

Frederic the Third was the firſt King under whom the kingdom became hereditary. He was ſupported by the merchants of Copenhagen, who could not bear the tyranny of the nobles. They encouraged him in his enterprize, and rewarded him with their ſervices. The merchants and people were ſo abuſed by the nobles, that they could kill any one of them, if they depoſited a crown under the body of the deceaſed. Frederic did not attempt to take this privilege from the nobility; but he ordained, that if a merchant or a peaſant killed a noble, in that caſe, they ſhould place two crowns below the dead body.

The coffin which contains the body of Frederic the Third, late King of Denmark, and father of the preſent, is very rich, and covered with various pieces of workmanſhip in ſilver.

Copenhagen is very advantageouſly ſituated on the Baltic ſea. It is a frontier town on the ſide of the Province of Schonen, and ſuſtained a ſiege very vigouroufly, during two years, againſt Guſtavus Adolphus, the father of Queen Chriſtina, whom we have ſeen at Rome. The ſpires of Sainta Maria bear the marks of this ſiege.

The Louvre is a very ordinary building, covered with braſs, which was formerly the reſidence of biſhops, when the King's court was held at Rochild. The ſtable is very handſome, and very long, and contains a number of excellent horſes; and the riding-houſe, which is near it, is a very curious ſtructure. It was here that the rejoicing took place when the Queen of Sweden left Copenhagen.

There are no buildings worth looking at in this city, if we except the palace of the Queen mother, the garden of the King, and that of the Duke of Guldenleu, which is

the title of all the firſt baſtards of the King of Denmark, and means *Lion doré*; and when the King upon the throne begets a Guldenleu, that of the late King takes the title of High Mightineſs.

We were four days and four nights in travelling one hundred and twenty leagues; and we arrived at Copenhagen on Thurſday, at the opening of the gate. We lodged at Krants.

Frederic the Third was archbiſhop of Bremen, but was elected King, on the death of his elder brother. He had ſix children, two of them boys, and four girls. The ſons were King Chriſtian, and Prince George. The eldeſt of his daughters, Anne Sophia, was married to George the Third, Duke of Saxony; another to the Duke of Holſtein, the third, Sophia Amelia, to William Palatine of the Rhine, and brother to Madame d' Orleans; and the fourth and youngeſt, Ulrica Eleonora, to the King of Sweden.

Chriſtian the Fifth, the preſent King, has five children. Three of them are ſons; Prince Frederic, eleven years old, Prince Chriſtian ſix, and Prince Charles one. Two are daughters, the eldeſt of whom is called Sophia, and the other

The tower of the obſervatory, which a carriage might aſcend, is a very curious building. It was reared by Frederic the Second. From the top of the tower we ſee the whole of the city, which is not very extenſive, but which appears almoſt wholly ſurrounded by water. There is a celeſtial globe of braſs here, made by the hands of Tycho Brahé, a famous mathematician, and a native of this country.

The Exchange is a very handſome building, placed oppoſite to the Louvre. Its ſpire is very curiouſly conſtructed. Four lizards, whoſe tails are raiſed up in the air, form the circumference. It is here, where all curioſities are expoſed to ſale, as at the palace.

The harbour contains the King's ſhips, amounting to about fifty or ſixty, the admiral's veſſel has a hundred guns. The Kings of Denmark never ſent out ſuch a number of ſhips before, and the laſt victory which they gained over the Swedes acquired them immortal honour.

The arſenal contains a number of fine pieces of cannon. There are even ſome of highly poliſhed ſteel, which were manufactured in Moſcovy. In a hall above, there are arms for ſixty thouſand men, a chariot which moves of itſelf, and another, in the wheels of which there is a clock, which ſtrikes the hour according to the motion of the wheels. All the ſpoils which the Danes acquired in their late wars with the Swedes, are placed here, with the equipage of ſeventeen veſſels, which were taken at one time.

The King's cabinet is above the library. There are ſeveral chambers filled with curioſities; among others, there is a tail of a horſe, which is the mark of authority among the Turks, and which the baſhaws place before their tents, when they are at the army; the Grand Seignior has three, and the Viſier two. We ſaw a beautiful female mandrake, the ſlippers of a girl who was defloured without being conſcious of it, a nail which they told us, is one of Nebuchadnezzar's, and one of the children of that Counteſs of Flanders who brought forth, at one birth, as many as there are days in a year.

The King is very handſome, and takes pleaſure in various exerciſes, ſuch as riding on horſeback, and the chace. He is four-and-thirty years of age, and married Charlotte Amelia daughter of the Landgrave of Heſſe.

There is no language ſo well adapted for beggars as the Daniſh. When they ſpeak, one is always apt to think that they are crying.

The

The kingdoms of Denmark and Norway are ſubject to the ſame ſovereign. They are bounded by Sweden on the eaſt, England on the weſt, the Frozen Ocean on the north, and Germany on the ſouth. They are connected with the latter by means of the Dutchy of Holſtein, which is near the iſthmus. This place, at preſent denominated Jutland, and which is ſituated between the Ocean and the Baltic Sea, was known to the ancients by the name of Cimbric Cherſoneſus.

Denmark is a rich and fruitful country, containing a number of iſlands, the moſt reſpectable of which are, Zealand, Falſter, Langeland, Laland and Funen, the latter of which is famous for that laſt victory which ſaved the kingdom from total deſtruction, when the Danes, ſupported by the Dutch, put all the power of Guſtavus Charles at defiance in this iſland, while he had beſieged Copenhagen two years. The King of Denmark is ſtill maſter of Iceland, which is ſuppoſed to be the *Ultima Thulé* of the ancients. This iſland, although it is covered with ſnow, nevertheleſs contains burning mountains, whence iſſue fire and flames, to which the Iceland poets compare the breaſts of their miſtreſſes. It alſo contains ſmoking lakes which turn every thing thrown in them to ſtone, and many other wonders, which render this iſland famous. Norway extends along the ſea ſhore the whole way to the houſe of Wardhus, which is, beyond the North Cape, in approaching from the ſide of the White Sea, upon which Archangel, a ſea-port of Muſcovy is ſituated. This extent of territory was ceded by the treaty of peace concluded betwixt Frederick the Third and Guſtavus Charles, late Kings of Sweden and Denmark. Greenland begongs to Denmark alſo; but it is only habitable three months in the year, which are employed in the whale-fiſhery.

Sweden has been ſeveral times joined to theſe two kingdoms, by alliances entered into between the Princes or Princeſſes of the two countries. But Sweden was totally ſeparated from them by Guſtavus the Firſt, head of the family of Vaſa, who cauſed himſelf to be crowned King of that kingdom in the year 1528, and introduced the Lutheran religion at the ſame time that Chriſtian the Third eſtabliſhed it in Denmark. The latter had always been an elective monarchy, as well as Sweden; but Frederick the Third, after having been engaged in ſeveral wars with his neighbours, and having ſaved the ſtate by his vigilance and courage, procured the government to be declared ſucceſſive and hereditary.

Frederick, third of the name, ſon of Chriſtian the Fourth, who reigned more than ſixty years, and of Anne Catharine, ſiſter of John Sigiſmond, Elector of Brandenburg, was father of the preſent King Chriſtian the Fifth. He was archbiſhop of Bremen, before he ſucceeded to the kingdom, in conſequence of the death of his father, and that of his elder brother, who was a year older; and he married in the year 1643, Sophia Amelia, daughter of George Duke of Brunſwick and Luneburg, and Anne Eleonora, daughter of Louis, Landgrave of Heſſe, chief of the houſe of Darmſtadt. The laſt reunion of theſe kingdoms happened in 1397, by the marriage of Haquin, ſon of Magnus the fifth King of Sweden and Inſelburg, and heir to Norway, with Margaret, eldeſt daughter of Waldemar the fourth, King of Denmark.

The laſt ſeparation, as I have already mentioned, took place in the year 1528, in conſequence of the tyrannical conduct of Chriſtian the Second to the Swedes. He obliged the inhabitants of Stockholm to give him hoſtages; and even after he had received them, continued his cruelties. Guſtavus Vaſa one of the hoſtages, eſcaped in Sweden, put himſelf at the head of the oppreſſed Swedes, who elected him King, and threw off the Daniſh yoke.

We learned in Denmark the nature of a Virſchat. The ambaſſador took the trouble to give us the information himſelf. He told us, that this amuſement generally

generally happened in the winter ſeaſon, during which time the King, wiſhing to amuſe himſelf, orders a Virſchat throughout the whole court, and forms one of the party.

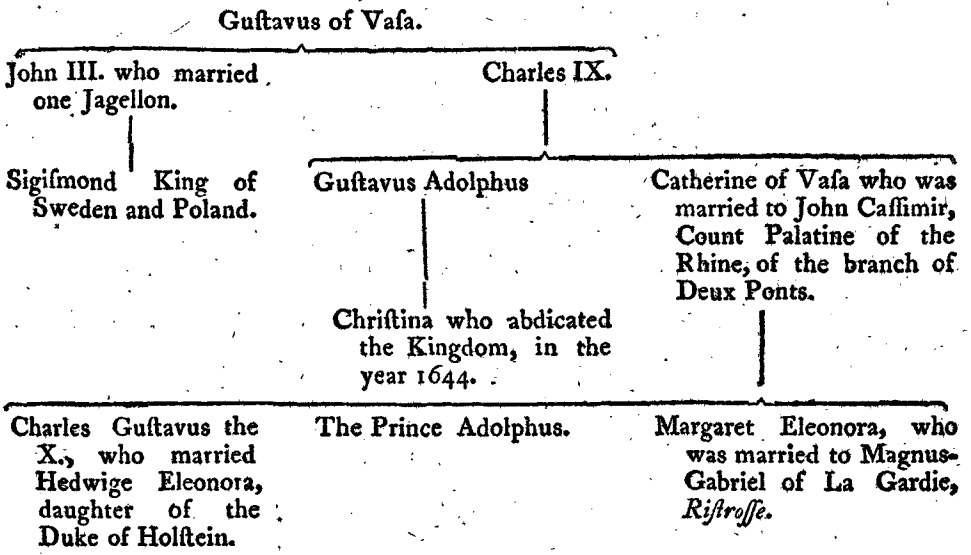
The whole court appears in different trades, with dreſſes appropriate to the buſineſs which they profeſs, and which has fallen to their lot. The King of Denmark himſelf appeared at the laſt, in the character of a coalman; and we were told that nothing can be more entertaining than this kind of maſquerade. It is not practiſed in Denmark only, but is alſo prevalent in Sweden, and throughout all Germany.

It is worthy of obſervation, that juſtice is extremely well diſtributed in Denmark; and that every year, a chamber is held for the purpoſe of determining appeals from all the courts of the kingdom, which continues to ſit till all the buſineſs is terminated.

The King of Denmark's guard conſiſts of infantry and cavalry, dreſſed in blue turned up with red, and a large cloak of the ſame colour. He has always forty thouſand men in arms, who are paid by the provinces, both in peace and war; and thoſe which are the moſt wealthy furniſh two regiments, one of infantry and the other of cavalry.

JOURNEY TO SWEDEN.

Genealogy of the Kings of Sweden, from the Days of Guſtavus the Firſt.


Guſtavus of Vaſa.
John III. who married one Jagellon.
Charles IX.
Sigiſmond King of Sweden and Poland.
Guſtavus Adolphus
Catherine of Vaſa who was married to John Caſſimir, Count Palatine of the Rhine, of the branch of Deux Ponts.
Chriſtina who abdicated the Kingdom, in the year 1644.
Charles Guſtavus the X., who married Hedwige Eleonora, daughter of the Duke of Holſtein.
The Prince Adolphus.
Margaret Eleonora, who was married to Magnus-Gabriel of La Gardie, *Riſtroſſe*.

Charles XI. the preſent monarch, married Ulrica Eleonora, ſiſter of the King of Denmark, by whom he had a daughter, his firſt child, in July, 1681.

That country at preſent denominated Sweden, was anciently called Scandia or Scandinavia, and is little elſe, if we may ſay ſo, than an iſland which ſtretches betwixt the Ocean, the Baltic Sea, and the Gulf of Bothnia.

This province is not extremely fertile throughout. Lapland is ſterility itſelf; and this people, whom I have had the curioſity to viſit at the end of the world, are equally deſtitute of bodily and mental food, having neither corporeal nor ſpiritual nouriſhment. But

But Gothland and Oſtrogothia are ſo fertile, in ſome places, that they may be compared to France; and the ſoil is ſo rich, that it rears in the ſpace of three months the ſame commodities, which it takes nine months, in other places, to produce. There are other places, where nature muſt be forced in order to produce nouriſhment ſufficient for the inhabitants, Schonen, Schanmoland, Angermania, and Finland; and it is here, where nature refuſing fertility to the plains, grants in its ſtead, abundance to the foreſts, which in winter are burnt by the inhabitants, for the purpoſe of ſowing in their aſhes, grain in ſpring, which arrives at greater perfection, and in a ſhorter time than any where elſe.

The Swedes are naturally a brave people; and without mentioning the Goths and Vandals, who, ſcaling the Alps and the Pyrennees conquered Italy and Spain, let us for a moment attend to Guſtavus Adolphus, the chief of conquerors, who was followed by very few Swedes, and who victoriouſly over-ran the whole of Germany, like lightening, making every Prince ſenſible of the force of his arms. Let us conſider a Charles Guſtavus, the laſt King of this country, who reduced the Danes, his moſt formidable enemies, to ſuch a degree, that they were obliged to retire within the walls of their capital, which was the only place in the kingdom remaining in their poſſeſſion, where he beſieged them two years, and who, after many engagements, died of a fever at Gottenburg, aged thirty-ſeven years, on the 12th day of February 1660.

This Prince, who was conſtantly performing wonders, forced heaven itſelf to aid and aſſiſt him, and to perform miracles in his favour. It hardened the waters of the Belt for the purpoſe of affording him an opportunity of performing a heroic action. Charles the Tenth led all his troops over a frozen ſea two leagues in width, with all his cannon, and encamped there where he remained ſeveral days with an intrepidity of reſolution, which ſurpriſed every body, but which was natural to him. If this Prince was a great warrior, he was equally an excellent politician; and he diſplayed it clearly during the reign of Queen Chriſtina; for, while ſhe amuſed herſelf with conſulting men of letters, whom ſhe invited from all quarters, but who taught her not the art of reigning, he embraced the opportunity of gaining the affections of all the ſenators, who were diſguſted with the adminiſtration of the Queen, and who obliged her to reſign the government in his favour.

Was it not the great Guſtavus Adolphus who led the way to this worthy ſucceſſor? and who, after having led a life wholly warlike and heroic, ended his days in the field of victory, and in the midſt of his troops, in conſequence of a muſket ſhot, which deprived Europe of its greateſt conqueror. Queen Chriſtina was a worthy deſcendant of this great Prince. This Princeſs had a ſoul truly royal, and exhauſted all the praiſes of ingenious men. She might have reigned longer, if ſhe had been more miſtreſs of herſelf; and the jealouſy which ſhe excited amongſt the ſenators, who beheld with impatience the greateſt favours laviſhed on *Riſtroſſe*, by whom ſhe had children, obliged her to reſign the crown. She changed her religion at the inſtigation of the Spaniſh ambaſſador, who promiſed her, that if ſhe became Catholic, ſhe ſhould be married to the King his maſter. She remained at Rome almoſt all her life, after ſhe abdicated the throne, and ſubſiſted on ten thouſand crowns, which the Pope gave her annually as a penſion, till the King of France put her in poſſeſſion of all her property. She kept in her own hand the fertile iſlands of Aland and Gothland, ſituated in the Baltic Sea, but ſhe exchanged them a ſhort time ago, for the territority of Norcopin in Oſtrogothia.

Charles XI., the preſent King, is ſon of Charles Guſtavus, Count Palatine, of the houſe of Deux Ponts, and of Hedwige Eleonora, youngeſt daughter of the Duke of Holſtein.

Holſtein. He is a Prince who does not diſgrace the dignity of his anceſtors: his commanding and royal demeanour diſplays that he is deſcended from the race of the illuſtrious Guſtavi. His diſpoſition is completely warlike; and as he has no enemies to war with, his chief employment conſiſts in hunting the bear. This ſport is rather followed in winter than ſummer; and when a peaſant has diſcovered traces of the boar, by means of his footſteps in the ſnow, he informs the chief huntſman, who conducts the King to the ſpot. The bear is an intrepid animal: he does not fly at the ſight of man, but walks on without ſwerving from his path. When he is obſerved to be ſufficiently near, it is neceſſary for the hunter to alight from his horſe and wait till he come pretty cloſe to him; he then gives the animal a ſevere ſtroke, which obliges him to raiſe himſelf on his hinder legs: this is the time to ſtrike, and it is very dangerous not to wound him mortally; for he now approaches the hunter with fury, and embracing him with his fore feet, generally ſtifles him; on this account it is neceſſary to have a piſtol for the purpoſe of ſhooting him, and if this fails, a ſhort ſpear muſt be reſerved for diſpatching him. We ſaw one at Stockholm which the King had killed with his own hand, in reſcuing his favourite Vaqmeſter who was almoſt deſtroyed by it. This animal lies in his den three or four months in the year, and during all this time takes no other nouriſhment than what he procures from ſucking his paw. The King has always in his poſſeſſion three or four little bears, whoſe teeth and claws are pared every month.

I knew at Copenhagen M. de Martangis, the ambaſſador, who conferred on me a thouſand favours: I was ſeveral times entertained by him. He conducted me to the houſe of Madame Counteſs of Rantzau, whoſe huſband was ambaſſador in France: I ſupped there with the beautiful ladies Revinſelau and Grabe, the latter of whom may juſtly be conſidered a perfect beauty. I alſo met there Madame de Ratelau and M. du Boineau, a native of Rochelle, one of the captains of the royal navy, who quitted the ſervice on account of his religion.

I left Copenhagen, and ſet out for Stockholm, on the firſt day of July. We ſaw Frederickſburg, the King's pleaſure-reſidence, which may be denominated the Verſailles of Denmark. The chapel is very magnificent, the pulpit and altar, and a number of other figures, being ſolid ſilver; but that which appeared to me the moſt curious, was an organ made of ivory, the ſculpture of which is ſaid to have coſt eighty thouſand crowns. The oratory of the King, which is behind the chapel, and where he hears the ſervice, is a place in which nothing has been ſpared for the purpoſe of rendering it magnificent. We were conducted through all the apartments of the palace, in which we obſerved nothing remarkable, except the great hall above, the ceiling of which was beautiful; the variety of colours forms a charming ſcene, the ſight of which highly gratifies the beholder.

After leaving Frederickſburg we arrived at Elſineur, where we ſlept. This is at the ſtrait of the Sound, where the veſſels pay toll to the King of Denmark. Swediſh veſſels pay no toll, on account of which the greater number of ſhips which paſs here take Swediſh colours, which are blue with a yellow croſs. The paſſage is guarded by a ſtrong fortreſs; but I do not believe that it would be very difficult to paſs without paying any thing. We ſlept at the houſe of the agent of the King of France, who is an Iriſhman. We croſſed next day to Elſimburg with an unfavourable wind. This town defended itſelf in the late wars for a conſiderable time againſt the Danes. During the ſiege ſix thouſand men were deſtroyed in eight days: they took it at laſt; but they gave it back, with all the other places which they had taken, to the crown of Sweden.

On our paſſage we ſaw Riga, Engelholm, Holm, and Halmſtadt, a fortified town, and famous for the laſt battle which the King of Sweden fought there. This was the

firſt engagement in which he was engaged, and the firſt victory he gained: he was accompanied by M. de Feuquieres, a lieutenant-general in the King's ſervice, and his ambaſſador in Sweden. It was in this battle that the young king, ſuffering himſelf to be hurried on by his courage, and believing himſelf followed by his regiment of drabans, who are his guards, and with whom he conceived himſelf invincible, advanced alone to the middle of the enemy's army, ſeeking every where the King of Denmark, and calling for him with a loud voice; but not finding him, he put himſelf at the head of one of the enemy's regiments, which he found without a leader, giving orders in German, like all the northern nations, and conducted it into the middle of his army, where it was cut in pieces.

From Halmſtad we travelled to Jenycopin, whoſe ſituation on the borders of the Weſer, a lake eight leagues in length, is delightful. We afterwards paſſed through Grenna, Norcopin, Lincopin, Nycopin, Vellit, and we arrived at Stockholm on Monday at eleven o'clock at night, after having travelled ſix days and ſix nights among rocks and foreſts of pine and fir, which form the fineſt proſpects in the world. We travelled this journey in a carriage which we purchaſed for four crowns at Draſé, and we obſerved the peaſants' houſes, which are conſtructed in the Muſcovite manner, with trees interlaced. The people have ſomething ſavage in their appearance; the air and the ſituation of their country inſpire them with this diſpoſition.

The Swediſh mile contains 6600 toiſes, and that of France 2600.

Stockholm is a city which the peculiarity of its ſituation renders delightful: it is ſituated almoſt in the middle of the Baltic Sea, at the mouth of the Bothnian Gulf. The approach is exceedingly dangerous, in conſequence of the number of rocks which ſurround it; but from the moment that the veſſels once arrive within the port, they are more ſafe than in any other in the world; they remain there without any anchor, and approach even to the walls of the houſes. Stockholm has more trade than any other port in the Baltic Sea; and as this ſea is only navigable during ſix months in the year, nothing has a grander appearance than this port, which is crowded with veſſels from the month of April to that of October.

We had no ſooner arrived at Stockholm than we waited on M. de Feuquieres, lieutenant-general in the King's ſervice, who has been ambaſſador here for ten years: he received us with all poſſible reſpect, and conducted us next day to kiſs the King's hand. This prince, twenty-five years of age, is ſon of Charles, Prince Palatine, to whom Chriſtina, daughter of Adolphus, laſt King of the houſe of Vaſa, reſigned the Swediſh crown, when ſhe wiſhed to retire from the throne and change her religion.

The King's taſte is wholly martial: the warlike exerciſes and thoſe of the chace are natural to him, and he takes no greater pleaſure than in the purſuit of theſe occupations. We had the honour of converſing with him almoſt a whole hour, and the pleaſure of contemplating him at our eaſe: he is well proportioned, his gait is majeſtic, and every thing about him beſpeaks the king: he married about a year ago ——, daughter of Frederick the Third, and ſiſter of the preſent King of Denmark. Theſe two royal perſonages have always had an extraordinary ſimilarity and ſympathy, which it is not difficult to perceive: Nature had formed them in every reſpect for each other.

The Prince never met with any one who could give him information reſpecting the Princeſs, without aſking queſtions of a particular nature, clearly ſhowing that there was more love than curioſity in his diſpoſition; and the Princeſs was always ſo anxious about the Prince, that it was remarked ſhe was leſs anxious about intelligence of the Prince, than about the Prince himſelf.

During our ſtay at Stockholm great rejoicings were made for the birth of a princeſs:

we were preſent at the ceremony of her baptiſm. There was on the occaſion an open table, and the prince, to diſplay his ſatisfaction, undertook to intoxicate all the court; and in a more merry manner than ordinary, made himſelf ſo. He even incited them by exclaiming, "A gentleman has no courage if he do not follow his king." He ſpoke the little French which he is poſſeſſed of to every body; and I obſerved that he was the only one at court who ſpoke it ſo imperfectly. All the Swediſh gentlemen have a particular pride in ſpeaking our language perfectly. Count Stembock, Grand Marſhal of the kingdom, the *Riſtroſſe* or Viceroy; Count de la Gardie, the Grand Treaſurer; Steinte Bielke, the Count Cuniſmar, all ſpeak French as elegantly as if they were Frenchmen themſelves. The Engliſh Envoy performed wonders at this feaſt, that is to ſay, he was firſt drunk. The Envoy of Denmark, who had held the princeſs in the name of the King his maſter, immediately followed him almoſt without reflection. After him the whole company followed in the ſame ſtate. The ladies were alſo of the party. The two handſome daughters of the *Riſtroſſe* held the two ends of the pall which covered the infant: they diſtinguiſhed themſelves among all the other ladies by their beauty and politeneſs of manners. We went ſome days after to viſit Count de la Gardie at Carſbery: his palace is regular, and being ſurrounded with rocks, and ſituated on the borders of the lake, is one of the handſomeſt in Sweden. The proprietor of this manſion, who is certainly one of the greateſt Lords in the kingdom, has been four months ago very ill treated by a reduction, as well as a great number of others: he has loſt more than eighty thouſand crowns by this re-union of property to the royal domain.

The buildings of Stockholm are grand. The houſe of the nobles, the palace of the *Riſtroſſe*, that of the Grand Treaſurer, and a great number of others, are worthy of obſervation. I ſhould have ſpoken of the Louvre before all the other buildings; but although it is no doubt the firſt in the city, in conſequence of the perſonage who inhabits it, we may ſafely ſay that it is only on this account, and in conſequence of the number of its apartments, that it deſerves to be taken notice of: there are ſome halls which are magnificently enough furniſhed, but they are not calculated to make a palace; and it is impoſſible to determine what are their ſhapes.

We ſaw during our reſidence here the execution of two ſervants, who had been preſent at the aſſaſſination of a gentleman which their maſters had committed: they were not the moſt guilty, but they were the moſt unfortunate. We admired the intrepidity and fortitude of theſe men on their way to the ſcaffold; they did not ſeem at all affected, and ſpoke careleſsly to all the perſons whom they met: one of them was married; his wife ſupported him on one ſide, and a clergyman on the other.

At Stockholm we knew M. de Feuquieres, the ambaſſador; M. de la Piquetiere, a learned and very intelligent man; M. le Vaſſeur, ſecretary to the embaſſy, and ſon of an advocate in the rue Quincampoix; M. de la Chenets, and Father Archange, carmelite and chaplain of M——. We alſo ſaw M. Bart, a corſair, who remained at Stockholm for the purpoſe of recovering payment for ſome prizes which he had taken from the Danes and Lubeckers, and ſold to the king, and which had been declared lawful.

At the hotel kept by Verſchal, a Norman, we knew M. M. de Saint Leu, la Neuville, Grandmaiſon, maſter of the horſe to the Count Charles Oxſtiern, Coiffard, ſurgeon, and ——————.

The mine called Coperberyt is the moſt curious in Sweden, and is the ſource of the whole wealth of the country: although there are ſeveral other mines, this has been always held in the higheſt eſtimation: no tradition tells the date of its being opened: it is four days' journey diſtant from Stockholm. One deſcries this mine long before one

arrives at it, by the ſmoke which iſſues from all quarters, and which makes it appear to be rather the ſhop of Vulcan than the reſidence of men. We behold on all ſides nothing but furnaces, fires, charcoal, ſulphur, and cyclops, who tend to complete this infernal picture. But let us deſcend this abyſs, the better to conceive its horrible nature. We were firſt conducted into a chamber where we changed our dreſs, and were each furniſhed with a ſtick ſhod with iron, for the purpoſe of ſupporting us in the moſt dangerous places. From hence we entered the mouth of the mine, which is dreadfully long and deep: we were unable to ſee the people working at the bottom, ſome of whom were raiſing ſtones, while others were throwing earth; ſome were blowing rocks, by fires prepared for the purpoſe; and, in fine, every one had his employment. We deſcended this pit by a number of ſteps which lead to it; and we now began to be ſenſible that we had as yet done nothing, and that our fatigue was only the beginning of ſeverer toils. In fact, our guides now lighted their flambeaux of fir, which ſcarcely pierced the thick darkneſs of theſe ſubterraneous regions, and which only furniſhed us with light ſufficient to diſtinguiſh the frightful objects which preſented themſelves to our view: the ſmell of the ſulphur ſtifled us; the ſmoke blinded, and the heat broiled us: and if to theſe objects we join the noiſe of the hammers, which reſound throughout theſe caverns, the ſight of thoſe ſpectres, naked as the hand, and black as devils, it muſt be confeſſed that nothing can give us a clearer idea of hell than this living picture, painted in the gloomieſt and blackeſt colours which can poſſibly be imagined.

We deſcended more than two leagues in the earth, by frightful roads, ſometimes upon trembling ſcales, ſometimes on light planks, and always in continual apprehenſion. We perceived in our deſcent a number of pumps, and curious machines for raiſing the water; but we were unable to examine them on account of the extreme fatigue which we had already experienced; we only perceived a number of unfortunate wretches who wrought the pumps. We went with conſiderable difficulty to the very bottom; but when it became neceſſary for us to re-aſcend, *ſuperaſque evadere ad auras*, it was with inconceivable difficulty that we regained our former height, where we were obliged to throw ourſelves upon the ground in order to recover our breath, which the ſulphur had deprived us of. We at length arrived at the mouth of the mine, by the aſſiſtance of ſome perſons who ſupported us under the arms. Here we begin to breathe with as much joy as a ſoul eſcaped from purgatory; and we were beginning to re-acquire our loſt vigour, when an affecting ſight preſented itſelf to our view: they were bringing up from the mine an unfortunate creature who had juſt been cruſhed by a ſtone which had fallen on him. Theſe accidents happen daily; and the ſmalleſt ſtones falling from ſuch a dreadful height, produce the ſame effect with the largeſt. There are always ſeven or eight hundred men who work in this abyſs, who gain ſixteen *ſous* a day; and there is almoſt an equal number of overſeers, with an axe in their hands as a mark of authority. I know not whether one ought more to pity the lot of theſe wretches, or the blindneſs of men who, for the purpoſe of indulging their luxury and gratifying their avarice, tear the bowels of the earth, confound the elements, and ſubvert the laws of nature. Boece was perfectly right when, complaining of the manners of his age, he exclaimed,

> "Heu! primus quis fuit ille
> Auri qui pondera tecti
> Gemmaſque latere volentes,
> Pretioſe pericula fodit?"

What indeed can be more inhuman, than to expoſe ſo many individuals to ſuch imminent danger? Pliny informs us that the Romans, who had more need of men than gold, would

would not ſuffer the mines which had been diſcovered in Italy to be opened, for the purpoſe of preſerving the lives of the people; and they thought that thoſe wretches who had forfeited their lives could not be more cruelly puniſhed than in ſuffering them to live, for the purpoſe of conſtantly employing them to dig their own graves. In this mine are found native ſulphur, blue and green vitriol, and octaedrons, which are ſtones naturally cut in a pyramidal form on all ſides.

From Coperberyt we came to a ſilver mine at Salberyt, a little village two days' journey diſtant from Stockholm, and one of the moſt delightfully ſituated places in that country. We travelled next day to the mine, which is about a quarter of a mile diſtant from the village. This mine has three large mouths, at which it is impoſſible to ſee the bottom: the half of a tub, ſupported by a cable, is employed inſtead of a ſtair-caſe, for the purpoſe of deſcending this abyſs: it riſes and falls by means of a very curious machine, which is wrought with water. The extent of one's danger may eaſily be conceived, when one muſt deſcend in this manner, having only one foot in this machine, and one's life depending on the ſtrength or weakneſs of a rope. A ſatellite, black as a devil, holding in his hand a torch of pitch and roſin, deſcended with us, and ſcreamed out an air ſo melancholy, that it ſeemed to have been made on purpoſe for this infernal deſcent. When we were about the middle we felt great cold, which, joined to the water which fell on us in torrents from all quarters, rouſed us from the lethargy into which we had fallen in deſcending to theſe ſubterraneous regions. We at length arrived at the bottom of this gulf, after half an hour's journey; there our fears began to diſappear; we no more beheld any thing frightful: on the contrary, every thing was brilliant in theſe nether regions. We deſcended ſtill farther below ground, upon extremely high ſcales, for the purpoſe of viſiting a ſaloon which is in the boſom of this cavern, and which is ſupported by a number of columns of ſilver, with which every thing is covered. Four ſpacious galleries diſcloſe themſelves, and the reflection of the lights, which ſhone on all ſides, and dazzled on the vaults of ſilver, and a clear rivulet which ran at their foot, did not tend ſo much to give light to the workmen, as to render this abode more magnificent than the palace of Pluto, which the ancients placed in the centre of the earth, where the god of wealth has eſtabliſhed all his treaſures. Men of all countries are to be ſeen in theſe galleries, ſeeking with care that object which confers ſo much pleaſure on mankind. Some draw carriages, others roll ſtones, and others are tearing the rocks aſunder. It is a town below a town, and contains houſes, taverns, ſtables and horſes; and what is very remarkable, there is a mill in the bottom of this gulf which raiſes the water out of the mine. One remounts by means of the ſame machine for the purpoſe of viewing the different operations by which ſilver is made.

The firſt ſtones taken out of the mine are called *ſtuff*, which are dried in a furnace, which burns ſlowly, and which ſeparates the antimony, arſenic, and ſulphur from the ſtone, the lead, and the ſilver, which remain together. This firſt operation is followed by another, in which the dried ſtones are thrown into troughs and piled upon each other, for the purpoſe of being reduced to duſt, by means of large hammers wrought by water: this matter is kept in water which runs conſtantly upon a large cloth, placed in a ſloping poſition, and by which all the thick and earthy matter is carried off, while the lead and the ſilver remain at the bottom; it is afterwards removed from hence, and thrown a third time into furnaces, which ſeparate the ſilver from the lead, which is converted into ſcum.

The Spaniards of Potoſi do not now employ ſo many different methods for the purpoſe of purifying ſilver, and rendering it malleable, ſince they found out the method of mixing it with quickſilver, which is the determined enemy of all the other metals,

which it deſtroys, except gold and ſilver, from which it ſeparates all other bodies, for the purpoſe of uniting itſelf to them. Mercury is found in this mine; and this metal, although ſome refuſe it ſuch a name, becauſe it is not malleable, is perhaps one of the moſt curious productions in nature; for being liquid, and flowing of itſelf, it is the heavieſt of all bodies, and changes into the lighteſt, by reſolving itſelf into vapour, which, meeting with a hard body, or a cold region, immediately thickens and reſumes its ancient form, without any poſſibility of ever being deſtroyed.

The perſon who conducted us to the mine, and who was overſeer of it, ſhowed us a great number of curious ſtones which he had collected from all parts: he ſhowed us a large piece of that ductile ſtone which, ſo far from being conſumed, becomes white in the fire, and which the Romans employed for the purpoſe of burning the bodies of their dead: he aſſured us that he had found it in this very mine, and preſented each of us with a ſmall piece, which, as a particular favour, he cut off from it.

We departed the ſame day from this little city to go to Upſal, where we arrived early next morning. This city is the moſt reſpectable in Sweden, both on account of its univerſity and its ſituation. Here all thoſe who devote themſelves to the church are obliged to ſtudy; but it is the policy of this country to prevent their nobility from taking holy orders, for the purpoſe of keeping up their numbers of gentlemen, who may be more uſefully otherwiſe employed.

We ſaw the library, which contains nothing extraordinary, if we except the *Codex Argenteus*, written in Gothic letters of ſilver by a biſhop of the Goths, called Ulphila, who lived in Meſia. This book was found in the ſack of Prague, and carried off by Count Konigſmark, who made a preſent of it to Queen Chriſtina.

The remainder of my obſervations on Upſal may be ſeen in the end of my account of my Journey to Lapland, becauſe I viſited it upon my return.

We alſo ſaw at Stockholm an Envoy of the Khan of the Lower Tartars, or Tartars of Chrimea, or Precopites, who inhabit the ancient Tauric Cherſoneſus, and the country which is ſituated betwixt the Boryſthenes and the Tanais. This Prince confers favours which coſt him ſcarcely any thing; and permiſſion to become his ambaſſador to Chriſtian Princes is one of his choiceſt favours. I was preſent when this Envoy had an audience; the King was ſitting in an arm-chair in the middle of his court: the Envoy made a poor ſpeech, without even looking upon the King: he then preſented to him five or ſix letters, folded lengthways, and wrapped up in taffetas: one was from the Khan; another from the wife of one of his brothers; and another from the miniſter. He offered ſome Tartarian horſes, not extremely handſome, but remarkably ſtrong. The King replied, that he would accept of them if they came from his maſter; and being aſſured that they did, he kiſſed the King's hand and put it upon his head. Five or ſix beggars were in his train; and indeed it was impoſſible to behold any thing more wretched.

OBSERVATIONS.

THE cities of Bremen, Hamburg, and Lubeck, which are imperial, with the Dukes of Mecklenburg, Holſtein-de-Sel, Lunebourg, Hanover, and, in general, the whole houſe of Brunſwick, form Lower Saxony, which is called the Circle of Lower Saxony, and has a vote in all the diets of the empire.

Luther is buried at Wittenberg.

It ought to be obſerved, that the chace of the bear is alſo conducted in Poland in various manners. As there is nothing ſo delicate as the paws of a bear, which are ſerved up at the tables of kings, ſo there is likewiſe no kind of chace in which gentlemen take greater pleaſure. It is dangerous to miſs in ſtriking; for the animal when ſtruck returns,

turns, as has been already mentioned, upon the hunter, and embracing him with his fore-paws, ſtifles him. We were told by the governor of a Pruſſian province, that one of his relations a ſhort time before had at the bear-chace his arm broken and his neck twiſted, which were the cauſes of his death. The peaſants chace in a different manner; they know the haunts of the animal, and go to attack him with a knife in their hands: when the bear approaches, they puſh into his throat their left hand wrapped up in linen, and with the right ſtab him in the belly. Another mode is leſs dangerous: the bear is very fond of the honey which bees make in the trunks of trees; he aſcends, drawn by the odour of his prey, to the ſummits of the higheſt trees: the peaſants put diſtilled ſpirits into the honey, and the bear finding the taſte agreeable, takes ſo much that the ſtrength of the ſpirit intoxicates him and makes him fall; the peaſant then finds him without ſtrength, in a recumbent poſture, and eaſily becomes maſter of him.

The Elector of Brandenburg is called ————: he has a ſon, fifteen years of age, who is denominated *Kurt-Prince:* he profeſſes the Calviniſtic religion. Amber is found upon his lands in Ducal Pruſſia; for Royal Pruſſia belongs to the King of Poland. It produces to him more than twenty-five thouſand crowns a month: he farms out the amber-fiſhery at from ſixty to eighty thouſand crowns; and there is a horſe-guard for the purpoſe of watching the ſhore. When the wind is high it is found in greateſt abundance. Before it comes out of the ſea it is ſoft, and will take the impreſſion of a ſeal. There are ſeveral pieces on which flies are found. This fiſhery extends from Dantzic to Memel.

The elk is an animal higher than a horſe, and of a whitiſh colour: it has a branch like the deer, and a foot of the ſame ſhape, very long; its under-lip hangs down, and it has a bunch upon the neck like a camel. It defends itſelf, againſt the dogs who purſue it, with its fore-feet, with which it ſtrikes them very forcibly.

The ſon of the Elector of Brandenburg married a year ago the daughter of Prince Bogeſlas de Ratzevie, Duke of Stuck, and of Kopil de Bitze, and of Dubniki, of the illuſtrious family of the Ratzevils, deſcended from the ancient Princes of Lithuania, and for more than three centuries princes of the empire. He was the ſon of Prince Jannalius, of the black branche, whoſe evil deſtiny led him to declare himſelf chief of that party which oppoſed the King, but which was ſoon after taken into favour, and of Eliſabeth Sophia, daughter of John George, Elector of Brandenburg, afterwards married to Julius Henry, Duke of Saxe-Lawembourg: he was governor of Ducal Pruſſia.

This young princeſs was wholly educated at the court of Brandenburg. The —— paid his addreſſes to her, and ſpent a large ſum of money on her account; but the Elector would not ſuffer more than eight hundred thouſand livres of rent to be ſent out of the country. The Poles conſtantly complain of his conduct, as there is a treaty which ſtipulates that this princeſs ſhould marry no other than a native of Poland. He who paid his addreſſes to her loſt his reaſon in conſequence of vexation.

The father of the Grand Duke of Muſcovy was called Frederic Alexander, and the preſent Duke, Alexander Michael, or Michael Federowitz, Michel ſon of Peter.

The Prince of Tranſylvania is called Apaty, pays eighty thouſand crowns of tribute to the Turk, and loves nothing but drinking. Reliqui governs the ſtate, and Telechi is general of the rebels. The capital of Tranſylvania is Cujuar, or Albejule.

M. Acakias has been reſident at the court of this Prince for the purpoſe of treating with the faction of the rebels.

REFLECTIONS.

It is uſual with travellers when they make a voyage to conjure up ſtorms, and all the weather they meet with, which is not perfectly calm, is, according to them, a continual tempeſt,

tempeſt, which in one moment drives their veſſels againſt the clouds, and in the next precipitates them to hell: ſuch are the deſcriptions of ſome. For my part, without any exaggeration, I ſhall mention that the Baltic Sea is famous for the number of ſhipwrecks which happen in it; and that it can ſeldom be croſſed in the autumn without being expoſed to bad weather, for in winter it is not navigable. We were obliged in our paſſage to take in ſail five or ſix times; and although it is generally made in three or four days, our paſſage was ſtill longer.

Theſe misfortunes were of ſome uſe; and the time during which we remained at anchor was not the portion of my life which has been the moſt uſeleſsly ſpent. I went every day to the perpendicular rocks, on which I remained ſome hours, where the abruptneſs of the precipices and the view of the ſea accorded extremely well with my reveries. It was during theſe ſolitary meditations that I entered wholly into myſelf, and inveſtigated the inmoſt ſentiments of my heart, to place truth in full view, without diſguiſe, ſuch as it really exiſted. I caſt a look back upon the events of my paſt life, reflected upon my deſigns which had never been executed, my reſolutions broken, and my unſucceſsful enterpriſes, I conſidered my preſent mode of life, my wandering voyages, my changes of abode, the diverſity of objects, and the conſtant motion to which I was expoſed: I felt myſelf wholly in that ſtate where inconſtancy is the prevalent inclination; and I came to this concluſion, without being in the ſmalleſt degree miſled by the ſuggeſtions of ſelf-love: I judged impartially of every thing: I reflected that all this conduct was in direct oppoſition to the real enjoyment of life, which conſiſts ſolely in repoſe; and that this deſirable tranquillity of ſoul is to be experienced in the purſuit of an agreeable profeſſion, which retains us in a ſteady poſition, like a ſhip held by an anchor in the midſt of a tempeſt. All the vague deſigns, inveſtigations of the future, chimeras, expectations of fortune, are only fantoms that miſlead us, which we take pleaſure in forming, and with which our minds entertain themſelves. All the obſtacles which ambition excites, far from ſtopping us, ought to make us diſtruſtful of ourſelves, and more than ever apprehenſive.

You know, Sir, as well as I do, that the choice of a profeſſion is one of the moſt difficult attempts of a man's conduct; and on this account there are numbers who never embrace any, remaining in continual indolence, living not as they would have wiſhed, but as they have begun, whether it ariſe from the fear of vexatious occurrences, the love of idleneſs, the hatred of toil, or any other cauſes.

There are other men who are not retarded in their career by obſtacles, and who giving themſelves up to that inconſtancy which is natural to them, cannot enjoy repoſe even when unemployed: they are continually agitated with new ideas and deſigns: they change ſolely from a deſire of change and a natural inconſtancy; and that which they have left pleaſes them always more than that which they enjoy. The whole life of theſe men is a continual agitation; and if they are ſometimes obſerved to be at reſt in their old age, it is not the hatred of change which influences them, but the laſſitude of age, rendering them leſs capable of motion, and preventing them from undertaking any enterpriſe; like thoſe reſtleſs individuals who are unable to ſleep, but who from frequently toſſing find at length that repoſe which wearineſs procures them.

I know not which of theſe ſituations are the moſt unhappy, but I am convinced that they are both extremely diſagreeable: hence ariſe thoſe tempeſts of the ſoul, and boiſterous paſſions, which make one wiſh that one neither could nor dared to undertake any thing, when one fears every thing, hopes every thing, and is deſirous to ſeek ſome where elſe that happineſs to which one is a ſtranger: hence alſo ariſe thoſe diſcontents, that diſpleaſure with ourſelves, that impatience at our idleneſs, thoſe complaints which we

we make at having nothing to do; every thing vexes us, company is troubleſome, ſolitude frightful, light is diſagreeable, darkneſs diſtreſſing, exerciſe fatigues, repoſe produces ſleep, the whole world is odious to us, and we become at length inſupportable to ourſelves. There is nothing which men of this deſcription do not deſire; and the high opinion which they entertain of themſelves leads them to attempt every thing: ambition makes them ſuppoſe all things poſſible; but they want courage, and irreſolution ſtops them. The ſucceſs of others, which is always in their view, ſerves at one time to foment their vague deſigns, and to excite their ambition; and at other times it expoſes them to the gnawings of jealouſy: they perceive with impatience the ſucceſs of others; they wiſh their debaſement, becauſe they cannot riſe to the ſame level; and the deſtruction of their fortune, becauſe they deſpair of being able to acquire one equally good.

Theſe men conſtantly cry up the cruelty of their fate, and complain of the inſenſibility of the age, and the depravation of human nature: they undertake diſtant journies, tear themſelves from their country, and ſeek climates warmed by another ſun: at one time they expoſe themſelves to the tempeſtuous ocean; at another time, diſguſted either with its calm or its ſtorms, they return once more to land: to-day the voluptuouſneſs of Italy enchants them; but no ſooner do they arrive in that country than they ſigh again for France, with all its delights. "Let us leave the city," exclaims a man of this deſcription, "where virtue is oppreſſed, where vice and luxury reign, and of which "I am unable to ſuffer the noiſe." Immediately after he ſays, "Let us go back to the "city; I languiſh in ſolitude; man was not made to live with beaſts; and it is a long "time ſince I heard the pleaſing buſtle which the confuſion of a city excites." A journey is no ſooner finiſhed than he undertakes another. In this manner, though always flying from himſelf, he cannot avoid himſelf: he carries his inconſtancy always about with him; and the ſource of his uneaſineſs is in himſelf, without being conſcious of it.

JOURNEY TO LAPLAND.

TRAVELLING has its toils as well as its pleaſures; but the fatigue which we experience, far from diſguſting us, generally increaſes our deſire of travelling. This paſſion, irritated by obſtacles, engages us inſenſibly to go farther than we intended; and when we ſometimes ſet out for the purpoſe of viſiting Holland, we find ourſelves, we know not how, at the end of the world. This circumſtance, Sir, has actually happened to me.

I underſtood at Amſterdam that the court of Denmark was at Oldenburg, which is only three days' journey diſtant from that place; and if I had not gone thither to ſee it, I ſhould either have diſplayed very little curioſity, or conſiderable contempt for that court. I therefore ſet out for Oldenburg; but Fortune, who wiſhed to take me ſtill farther, ſo ordained that the King had departed two days before my arrival. I was told that I ſhould find him at Altona, which is only at the diſtance of a muſket-ſhot from Hamburg. I believed myſelf bound in honour to follow my deſign, and to travel two or three days' journey farther, in order to enjoy the ſight which I wiſhed. Beſides, Hamburg is a Hanſeatic town, famous for its commerce with the whole world, and reſpectable on account of its fortifications and its government. I ſhould have found at Altona the Daniſh court; but I only found a part of what I wiſhed to ſee: I only ſaw the Queen-mother and Prince George her ſon, who were going to the waters of Pyrmont. I viſited Hamburg, which pleaſed me highly: and after having gone ſo far to ſee the King, I thought that I was bound to viſit him in his capital city, where I was ſure to find him. I ſet out for Copenhagen: the ambaſſador preſented me to the King,

and I had the honour to kiſs his hand, and to converſe with him ſome time. My reſidence in Copenhagen was extremely agreeable; and I found the ladies in it ſo witty and ſo handſome, that I ſhould ſcarcely have been able to leave them, if I had not been aſſured that thoſe of Sweden were equally agreeable. The anxious deſire which I had of ſeeing the King of Sweden alſo induced me to viſit Stockholm. We had the honour of ſaluting the King, and of converſing with him for a whole hour. As he knew we were travelling from motives of curioſity, he informed us that Lapland deſerved to be ſeen by the curious, both on account of its ſituation and its inhabitants, whoſe mode of living is quite different from that of all Europe; and he gave orders to Count Steinbielk, grand treaſurer, to give us every neceſſary recommendation, if we wiſhed to undertake the journey. And pray, Sir, who could reſiſt the advice of a King, and a great King too, like that of Sweden? Might not one with his advice undertake any thing? And could we be unſucceſsful in an attempt which he himſelf had recommended, and to which he wiſhed ſucceſs? The advices of kings are commands; and it was on this account that, after putting all our affairs in order, we ſet ſail for Torno, on Wedneſday the twenty-third day of July, 1681, at mid-day, after having paid our reſpects to M. Steinbielk, grand treaſurer, who, obeying the orders which he had received from the King, his maſter, gave his recommendations to the governors of the provinces through which we were to travel.

We were carried by a ſouth-weſt wind as far as Vacſol, where the ſhips are viſited. On our paſſage thither we were ſtruck with the ridiculous poſition of Stockholm. It is almoſt incredible that a ſituation, ſuch as that of this city, ſhould have been choſen for the purpoſe of containing the capital of ſuch an extenſive kingdom as that of Sweden. It is ſaid that the founders of this city, ſeeking a ſpot on which to build it, threw a ſtick into the ſea, with the determination to build the city wherever the ſtick ſtopped: the ſtick conſequently ſtopped in the place where the city now ſtands, which has nothing frightful about it but its ſituation; for the buildings are handſome, and the inhabitants polite.

We ſaw the iſland of Aland, forty miles diſtant from Stockholm: it is very fertile, and becomes the retreat of the elks, who go thither from Livonia and Carelia, when the winter allows them to paſs over on the ice. This animal, though in ſome reſpects like the deer, ſurpaſſes it in ſwiftneſs and ſtrength, which it employs againſt the wolves, with whom it frequently engages. The ſkin of this animal belongs to the King; and the peaſants are obliged, under pain of death, to carry it to the governor.

After leaving this iſland we loſt ſight of land, and did not again deſcry it till Friday morning, in the neighbourhood of Hernen or Herneſante, which is a hundred miles diſtant from Stockholm, equal to three hundred French leagues, and the wind continuing extremely ſtrong, we ſoon deſcried the iſlands of Ulfen, Schagen, and Goben; ſo that on Saturday we found that we had left Angermania, and were now as far as Urna, the firſt city of Lapland, and which takes its name from the river on which it is ſituated. This city gives its name to the whole province, which is called Urna Lapmark. It is ſituated in 38° of longitude, and in 65° 11′ of north latitude, diſtant from Stockholm about one hundred and fifty miles, which amount to about four hundred and fifty French leagues.

We ſaw the iſlands of Quercken on Saturday, and the wind continuing always ſouth-weſt, enabled us to perceive at mid-day the little iſland of Ratan; and at four o'clock of the evening we found ourſelves as far as Cape Burockluben.

After paſſing this little cape we loſt ſight of land, and on Sunday morning, the wind having continued ſoutherly during the whole night, we found ourſelves as far as Mal-

hurn,

hurn, a little iſland eight miles from Torno. Some fiſhermen belonging to it came off to us in a little bark, the thinneſt I have ever ſeen, the boards of which were ſewed together in the Ruſſian manner. They brought us ſome *ſtrumelin*, and we gave them in exchange biſcuit and ſpirits, with which they returned completely ſatisfied.

The wind continuing ſtill extremely favourable, we arrived within a league of Torno, where we caſt anchor.

It is almoſt incredible that we could have travelled ſo far in four days. The diſtance from Stockholm to Torno is computed to be two hundred Swediſh miles by water, which are equal to ſix hundred French leagues; and we made this voyage, with a ſouth and ſouth-ſouth-weſt wind ſo favourable and ſo ſtrong, that having left Stockholm on Wedneſday at mid-day, we arrived here at the ſame hour on the Sunday following, without having been obliged to ſhift our ſails during the whole voyage.

Torno is ſituated at the extremity of the Gulf of Bothnia, in 42° 27′ of longitude, and in 67° of latitude. This is the laſt town in the world towards the north; the reſt, as far as the cape, being only inhabited by Laplanders, ſavages who have no fixed reſidence.

Here the northern nations hold their fairs in winter, when the ſea is ſufficiently frozen to allow them to travel in ſledges. At this time all the people of the north, Ruſſians, Muſcovites, Finlanders, and Laplanders from all the three kingdoms, come hither on ſnow and ice, which is ſo convenient, that by means of ſledges one can travel in one day from Finland to Lapland, and croſs the Bothnian Gulf on ice, although it is in the narroweſt places thirty or forty Swediſh miles in breadth. The trade of this town conſiſts in fiſh, which are ſent to a great diſtance; and the river Torno abounds ſo much in pike and ſalmon, that it could furniſh a ſufficient quantity to ſupply all the inhabitants of the Baltic Sea: they ſalt ſome for exportation, and ſmoke others in ſhallow veſſels, which are conſtructed like baths. Although this town is, ſtrictly ſpeaking, nothing but a confuſed maſs of wooden huts, it pays annually two thouſand pieces of braſs, which amount to about a thouſand livres of our money.

We lodged with the agent for the bark which conveyed us from Stockholm: his wife was not at home; ſhe had gone to attend a fair to the diſtance of ten or twelve leagues, for the purpoſe of bartering ſalt and meal for the ſkins of rein-deer, minevers, and other animals: for the whole trade of this country is generally carried on in barter; and the Ruſſians and Laplanders ſcarcely ever do buſineſs in any other manner.

We went next day, Monday, to ſee *Johannes Tornæus*, a learned man, who had tranſlated into the Lapland language the Pſalms of David, and had written an hiſtory of the country: he was a country prieſt, and had died three days before: we found him ſtretched out in his coffin with the dreſs of his profeſſion, which had been made on purpoſe for him. He was much regretted here, and had travelled through a conſiderable part of Europe.

His wife was in another part of the room lying on her bed: ſhe teſtified the regret which ſhe felt at loſing ſuch a huſband; and a number of other women, her friends, ſurrounded the bed, and re-echoed by their groans to the grief of the widow.

But that which conſoled them a little, in ſuch great affliction and general ſadneſs, was a great number of large pots of ſilver, made in the antique manner, and filled ſome with French, ſome with Spaniſh wines, and ſome with ſpirituous liquors, which they took good care never to leave long empty. We taſted of them all; and the widow often interrupted her lamentations to preſs us to drink: ſhe even ordered tobacco to be brought us, but we declined taking any. We were afterwards conducted to the church, of which the deceaſed was paſtor, where we ſaw nothing worthy of obſervation; and

when taking leave of the widow, we were again obliged to drink to the memory of the dead, and to do that which is called *libare manibus*.

We afterwards went to the dwelling of a perſon who was in our company; his mother received us with all poſſible kindneſs; and theſe people, who had never before ſeen Frenchmen, did not know how to teſtify the joy, which they felt at ſeeing us in their country.

On Tueſday, they brought us a quantity of furs, to ſell; and of large coverings furred with ſkins of white hares, which they offered to diſpoſe of for a crown. They alſo ſhewed us dreſſes of the Lapponians, made of the ſkins of young rein-deer, with their whole appurtenances, boots, gloves, ſlippers, ſaſh, and bonnet. We went, the ſame day, to the chace, around the houſe; we found numbers of wild woodcocks, and other animals unknown in our country; and we were aſtoniſhed, that the inhabitants whom we met with, were no leſs anxious to avoid us than the game.

On Wedneſday, we received a viſit from the magiſtrate and burgo-maſter, who offered us their ſervices in every thing which was in their power. After dinner, they came to conduct us to their barks, and brought us to the prieſt of the town, who is ſon-in-law of the deceaſed Tornæus.

We now ſaw, for the firſt time, a Lapland ſledge, and admired its ſtructure. This machine, which they call *Pulea*, is made like a ſmall ſhip-boat, raiſed in front, for the purpoſe of more eaſily keeping off the ſnow. The prow conſiſts ſolely of a ſingle plank, and the body is compoſed of ſeveral pieces of wood, ſewed together with a large thread of a rein-deer, without a ſingle nail; this wood is joined to another piece in front, which is very ſtrong, and which extends over the whole length above, and by going beyond the reſt of the ſtructure, ſerves the ſame purpoſe with the keel of a ſhip. It is upon this piece of wood, that the ſledge runs; and as it is only about four fingers breadth wide, it rolls conſtantly from ſide to ſide; the traveller places himſelf in the inſide, as in a coffin, where the half of his body is covered; there he is tied, and rendered immoveable, with the exception of his hands, one of which is employed in holding the reins, and the other ſupports him, when in danger of falling. He is obliged carefully to balance himſelf; on which account, thoſe who are unaccuſtomed to this mode of travelling are often in danger of their lives, and chiefly when the ſledge deſcends the ſteepeſt rocks, over which it flies with ſuch horrible ſwiftneſs, that it is impoſſible to conceive the rapidity of the motion, without having experienced it. We ſupped this evening in public with the burgo-maſter; and the whole inhabitants came in crowds to ſee us eat. We poſtponed our departure, till the next day; and we took an interpreter.

On Thurſday the laſt of July, we left Torno in a little Finland boat, made for the purpoſe of performing voyages here; it is about twelve feet long, and three broad. It is impoſſible to ſee any thing better or more lightly built, than this boat; and to ſuch a degree is this carried, that two or three men can eaſily bear it, when they are obliged to paſs the cataracts of the river, which are ſo impetuous, as to roll down ſtones of an immenſe ſize. We were obliged to walk on foot almoſt all the reſt of the day, on account of the torrents which fell from the mountains, and of a boiſterous wind which forced the water into the boat in ſuch quantities, that if it had not been immediately bailed out, the boat would ſoon have been filled. We went, along the banks of the river, conſtantly hunting; and killed ſome game; we were aſtoniſhed at the number of ducks, geeſe, and water-fowl, and ſeveral other birds, which we met with at every ſtep. We did not to-day go ſo far as we had intended, in conſequence of a violent rain which took place, and obliged us to paſs the night at a peaſant's houſe, at the diſtance of a league and a half from Torno.

We travelled the whole of Friday without ſtopping, and were from four o'clock of the morning, till night, in going three miles; if, indeed, it may be called night where the ſun is always in ſight, and where no diſtinction can be made betwixt to-day and to-morrow.

We went more than half of the way on foot, in conſequence of the dreadful torrents, which it was neceſſary to paſs. We were even obliged to carry our boat in ſome places; and we had the pleaſure of ſeeing at the ſame time, two little boats deſcending in the midſt of the cataracts. The ſwifteſt and the lighteſt bird could not fly with ſuch impetuoſity; the ſight cannot even follow the courſe of theſe boats, which hide themſelves from view, and at one time dive into the waves where they ſeem buried, and at another time riſe to an aſtoniſhing heigth. During this rapid courſe, the pilot is ſtanding, and employs all his ſkill to avoid ſtones of an extraordinary ſize, and to paſs through the middle of rocks, in a ſpace no larger than the breadth of the boats, which would be driven into a thouſand pieces, if they touched them in the ſlighteſt degree.

We killed to-day in the wood, two young pheaſants, three ducks, and two teal, without going out of our way, during which, we were very much incommoded by gnats, which are the curſe of this country, and which nearly drove us to deſpair. The Laplanders have no other method of defending themſelves againſt theſe curſed creatures, than by filling the places of their reſidence with ſmoke; and we obſerved, on the road, that to preſerve their cattle from theſe troubleſome inſects, they light a large fire, in the place where their cows, (which are all wholly white,) graze amidſt the ſmoke of which they place themſelves, and thus chaſe away the gnats, which are unable to remain.

We purſued the ſame method, and ſmoked ourſelves as ſoon as we arrived at the houſe of a German, who has reſided thirty years in the country, and receives the tribute of the Laplanders for the King of Sweden. He told us, that this people were obliged to be in a certain place, appointed for them in the preceding year, to bring the neceſſary tribute; and that they generally preferred the winter ſeaſon on account of the convenience which it afforded them, in travelling, by means of their rein-deer, upon the ice. The ſum which they pay is very ſmall; and it is the policy of the King of Sweden, as he is deſirous that they ſhould remain his tributaries, not to impoſe on them vexatious burdens, leſt this people, deſtitute of any fixed reſidence, and to whom the whole of Lapland is a dwelling-place, ſhould remove to the territories of other Princes, on account of the troubleſome exactions to which they were ſubjected.

Some of theſe people, however, pay tribute to different countries; and ſometimes, a Laplander will be tributary to the King of Sweden, that of Denmark, and the Grand Duke of Muſcovy; they will pay to the firſt on account of reſiding within his territories; to the ſecond, for permiſſion to fiſh on the coaſt of Norway, which belongs to him; and to the third, that they may be allowed to hunt upon his lands.

Nothing worthy of obſervation befel us during our journey on Saturday; but we had no ſooner arrived at the reſidence of a peaſant, than we were aſtoniſhed with finding every body bathing. Their baths are made of wood, like all their houſes. One obſerves in the middle of this bath, a great maſs of ſtones thrown together without order, except that they leave a hole in the middle, in which the fire is lighted. Theſe ſtones being once heated, communicate warmth to the whole place; but this heat augments to a great degree, when they proceed to throw water upon the flint-ſtones, which emitting a ſtifling ſmoke, cauſe the air which is breathed in theſe places to be warm as fire. But what ſurpriſed us moſt in entering this bath, was finding boys and girls,

girls, mothers and ſons, brethren and ſiſters all promiſcuouſly together, and obſerving, that the naked females remained quite unconcerned at being expoſed to the view of ſtrangers. But we were ſtill more ſurpriſed at beholding young girls with a ſwitch, ſtriking the naked men and boys. I at firſt ſuppoſed, that nature being exhauſted by great ſweat, required this aſſiſtance for the purpoſe of ſhowing, that there ſtill remained ſome ſigns of life in the bather; but I was ſoon undeceived, and learnt, that this practice was followed, in order that the frequent ſtrokes ſhould open the pores, and aſſiſt in producing great perſpiration. I afterwards with difficulty conceived how theſe people, iſſuing naked from their fiery baths, could run and throw themſelves into an extremely cold river, which was within a few paces of the houſe; and I ſuppoſed, that they muſt have very ſtrong conſtitutions, before they could remain unaffected with thoſe conſequences which ſuch a ſudden tranſition from heat to cold was naturally calculated to produce.

You would never have believed, Sir, that the Bothnians, an extremely ſavage people, ſhould have imitated the Romans in their luxury and their pleaſures. But you will be ſtill more aſtoniſhed, when I inform you, that theſe ſame people who have baths among them, like emperors, have no bread to eat. They live upon a little milk, and nouriſh themſelves with the tendereſt of the bark, which they find on the tops of the pines. They gather it, when the tree gives out its ſap, and after expoſing it ſome time to the ſun, they bury it in large baſkets under ground, over which they kindle a fire, which gives it a very agreeable colour and flavour. Such, Sir, throughout the whole year is the food of men, who eagerly indulge themſelves in the luxury of a bath, and who can live without bread.

We were extremely fortunate at the chace on Sunday, and brought home a conſiderable quantity of game; but we ſaw nothing worthy of remark, except two long wooden planks of fir, with which the Laplanders run with ſuch remarkable ſwiftneſs, that no animal, even the fleeteſt, can eſcape them, when the ſnow is hard enough to ſupport them.

Theſe planks, extremely thick, are two ells long, and half a foot broad; they are made pointed before, and are pierced through at the thickeſt part, for the purpoſe of paſſing a leathern ſtrap which keeps the feet firm and immoveable. The Laplander who ſtands upon it, holds a ſtick in his hand, to one end of which a round piece of wood is attached to prevent it from entering into the ſnow, and the other end is pointed with a piece of iron. This ſtick is employed to give him the firſt motion, to keep him up while running, and to ſtop him when he chuſes; with this he alſo pierces the beaſt he is in purſuit of, when he approaches near enough for that purpoſe.

It is difficult enough to conceive the fleetneſs of theſe hunters, who can, by the aid of theſe inſtruments, outrun the ſwifteſt animals; but it is impoſſible to have an adequate idea of their method of deſcending the ſteepeſt precipices, and how they can mount the moſt craggy mountains. All this, however, they perform, Sir, with an addreſs which ſurpaſſes imagination, and which is ſo natural to the people of this country, that the women are no leſs adroit in the uſe of theſe planks than the men. They go to viſit their relations, and travel in this manner the longeſt and moſt difficult journies.

We met with nothing remarkable on Monday, except the quantity of game which we ſaw and killed; we made uſe of no leſs than twenty pieces this day; it is true, we had purchaſed five or ſix ducks from ſome peaſants who had taken them. Theſe people uſe no other arms in hunting, than the bow or the croſs-bow. They employ the bow in hunting the larger beaſts, as the boar, the wolf, and the wild rein-deer; and

and when they wiſh to take the leſs conſiderable animals, they make uſe of the croſs-bow, which differs from ours, only in its ſuperior ſize. So ſkilful are thoſe people in the uſe of theſe arms, that they never fail in ſtriking the object at the greateſt diſtance at which they can behold it. The ſmalleſt bird cannot eſcape them; there are even ſome who will ſtrike a pin on the head. The arrows which they uſe, are of various kinds; ſome are pointed with iron, or the bone of a fiſh; and others are round, ſhaped like a ball, cut through the middle. They make uſe of the firſt kind, with the bow when they go to the greater hunts, and of the latter with the croſs-bow when they attack animals which can be deſtroyed without giving them any dangerous wounds. They employ theſe round arrows in attacking the minevers, martins, and ermines, that they may preſerve the ſkins whole; and, becauſe it is difficult to avoid leaving a mark on the ſkin, where the ſtroke has been given, the moſt ingenious never fail to hit the ſpot that they wiſh, and generally ſtrike the head, which the leaſt valuable part of the ſkin.

We arrived on Tueſday at Kones, and ſtopped there on Wedneſday, for the purpoſe of reſting ourſelves, and of ſeeing the iron and copper-works, which are at this place. We admired the method which they follow in working theſe metals, and of preparing the copper before it is made into *Pelottes*, which form the money of the country, after it has been ſtamped with the image of the Prince. But that which aſtoniſhed us moſt of all was, the conduct of one of the founders, who approached the furnace, and took into his hand a quantity of copper which the violence of the heat had rendered liquid as water, where he continued to hold it ſome time. Nothing can be more frightful than theſe abodes: The torrents which fall from the mountains, the rocks and the woods which ſurround them, the blackneſs and the ſavage air of theſe founders, all contribute to form a horrible reſidence. Theſe frightful ſolitudes, however, are ſometimes agreeable, and pleaſe one, at times, as much, as the moſt magnificent abodes; and it was in the midſt of theſe rocks, that I compoſed the following verſes; a practice to which, I had, for ſome time, been unaccuſtomed.

Tranquilles et ſombres forêts,
Ou le ſoleil ne luit jamais
Qu'au travers de mille feuillages,
Que vous avez pour moi d'attraits!
Et qu'il eſt doux, ſous vos ombrages,
De pouvoir reſpirer en paix!

Que j'aime avoir vos chênes verds,
Preſque auſſi vieux que l'univers,
Qui, malgre la nature émue,
Et ſes plus cruels aquilons,
Sont auſſi ſûrs près de la nue,
Que les epis dans les ſillons!

Et vous, impétueux torrents,
Qui, ſur le roches murmurants,
Roulez vos eaux avec contrainte,
Que le bruit que vous excitez
Cauſe de reſpect et de crainte
A toux ceux que vous arretez!

Quelquefois vos rapides eaux,
Venant arroſer les roſeaux,
Forment des etangs pacifiques,
Où les plongeons et les canards,
Et tous les oiſeaux aquatiques,
Viennent fondre de toutes partes.

D'un

D'un côté l'on voit des poiſſons,
Qui, ſans craindre les hameçons,
Quittent leurs demeures profondes ;
Et pour prendre un plaiſer noveau,
Las de folâtrer dans les ondes,
S' élancent et ſautent ſurs l'eau.

Tous ces édifices détruits,
Et ces reſpectables débris,
Qu'on voit ſur cette roche obſcure,
Sont plus beau que les bâtimens
Où l'or, l'azur, et la peinture,
Forment les moindres ornements.

Les temps y laiſſe quelques trous,
Pour la demeure des hiboux ;
Et les bêtes d'un cri funeſte,
Les oiſeaux ſacrés à la nuit,
Dans l'horreur de cette retráite,
Trouvent toujours un ſûr réduit.

We left theſe forges on Thurſday, to go to others which are diſtant from them about eighteen Swediſh miles, which are equal, to nearly fifty French leagues. We kept always in the ſame road, there being no other in the country, and purſued our journey to the northward, on the banks of the river. We learnt, that it had here another name, and that it was called by the inhabitants. *Wilnama Suanda.* We paſſed the whole night, upon the water, and we arrived next day, being Friday, at the poor hut of a peaſant, which, however, we found to be empty. The whole family, conſiſting of five or ſix perſons, were gone out; ſome were in the woods, and others had gone to fiſh the pike. This fiſh, which they dry, ſerves them for nouriſhment during the whole year. They do not take it by means of nets, as others do; but by lighting a fire on the prow of their little bark, they draw the fiſh to the light of this flame, and harpoon them with a long ſtick, pointed with iron, in the ſhape of a trident. They catch great numbers of this fiſh, of an extraordinary ſize; ſo that nature like a bountiful mother, denying them fertility of ſoil, furniſhes them with the abundance of the waters.

The farther one advances in this country, the miſery is the greater; the inhabitants are ignorant of the uſe of corn; fiſh-bones, ground with the bark of trees, are uſed inſtead of bread, and notwithſtanding this horrid diet, theſe people live in perfect health. As they are deſtitute of phyſicians, it is not ſurpriſing, that they ſhould be alſo ignorant of diſeaſes, and ſhould live to ſuch an advanced age, that they generally ſurvive till they are a hundred years old, and ſome of them, a hundred and fifty.

We made little progreſs on Saturday, as we ſtopt the whole day in a ſmall houſe, which is the laſt that one meets within this country. We had various amuſements while reſiding in this cabin. The firſt was to employ ourſelves, every one at different exerciſes as ſoon as we arrived. One cut a dry tree in the neighbouring wood, and drew it with difficulty to the place of its deſtination, another, after having ſtruck a light with a flint, blew with all his ſtrength to lighten a fire; ſome were engaged in preparing a lamb, which they were going to kill; and others, poſſeſſing more foreſight, left theſe petty employments, and went to procure from a neighbouring pond, which was full of fiſh, ſomething for to-morrow. This pleaſure was followed by another, for no ſooner were we ſeated at table, than we agreed, on account of our preſſing neceſſities, to order a general hunt. Every body made preparations for this purpoſe; and having taken two little barks and two peaſants with us, we abandoned ourſelves on the river to

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our good fortune. We hunted in the ſtrangeſt and moſt delightful manner imaginable. No one has ever heard that people went a hunting with ſticks in France; but ſuch is the practice here, for ſo abundant is the game that they make uſe of rods, and even ſticks to kill them. The birds which we caught in greateſt numbers, were divers; and we admired the addreſs with which they were taken. The peaſants followed them wherever they went; and when they perceived them ſwimming below water, they threw their ſtick, and ſtruck them in the head at the bottom of the water with ſuch addreſs, that it is difficult to conceive the promptitude with which they performed this action. For our parts, who were not made for this mode of hunting, and whoſe eyes were not fine enough for piercing to the bottom of the river, we ſtruck at random in the ſame places where we ſaw they ſtruck, without any other weapons than ſticks; and ſo much execution did we make, that in leſs than two hours, we procured more than twenty, or twenty-five pieces of game. We returned to our little dwelling, much pleaſed with having ſeen this hunt, and ſtill more with bringing ſomething along with us for our ſupport. Good fortune, like bad, ſeldom comes alone, and ſome peaſants, having heard of our arrival, which had been rumoured over the country to a great diſtance, partly from curioſity to ſee us, and partly to receive ſome of our money, brought us a ſheep, which we purchaſed for five or ſix *ſous*, and which increaſed our ſtock of proviſions, to ſuch a degree, that we believed ourſelves well enough furniſhed to undertake a journey of three days' length, during which time we ſhould be unable to meet with any other houſe. We ſet out early on Sunday morning, that is, at ten o'clock; for the neceſſity which we were under of taking reſt, prevented us from being ever on the road before this hour.

We were ſurprized at meeting with ſo many ſwallows in this northern latitude, and having aſked the country people who conducted us, what became of them in winter, and whether they migrated to warm regions, they aſſured us, that they formed platoons, and buried themſelves in the ſlime which is at the bottom of the lakes; and that they await in this place, the return of the ſun to his former vigour, when he pierces to the bottom of theſe marſhes, and gives them again that life which the cold had deprived them of. I was told the ſame thing, by the ambaſſador at Copenhagen, and by ſeveral perſons at Stockholm; but I could never believe, that theſe animals could live more than ſix months buried in the earth, without any ſuſtenance. However, ſuch is the fact; and the truth of it has been confirmed to me by ſo many people, that I can no longer have any doubt on the ſubject.

We lodged to-day at *Coctuanda*, where Lapland commences; and next day, being Monday, we travelled four miles, and encamped on the bank of the river, where we were obliged to ſleep in the open air, and where we made ſmoking fires to preſerve us from the importunity of the gnats. We made a large round intrenchment formed of a number of tall dry trees, and of ſmaller ones for the purpoſe of lighting them; we placed ourſelves in the middle, and made the beſt fire that I have ever ſeen. The wood which we burned would certainly have been ſufficient to load one of thoſe large boats which come to Paris with wood; and a ſmall quantity more would have been ſufficient to ſet the whole foreſt on fire. We remained in the midſt of theſe fires the whole night, and we ſet out next morning, being Tueſday, for the purpoſe of viſiting the copper-mines, which were only two leagues diſtant. We travelled towards the weſt on the border of a little river, called *Longaſiochi*, which formed here and there the moſt beautiful farms that I have ever ſeen: and after having been often obliged to carry our boat, for want of water, we arrived at Swapavara, or Suppawahara, where

the copper-mines are ſituated. This place is about a league diſtant from the river and we were obliged to travel the whole way on foot.

We were extremely glad to hear upon our arrival, that there was a Frenchman here. You ſee, Sir, that there is no place, however retired, where Frenchmen are not to be found. He has wrought in theſe mines nearly thirty years, and he had really more the appearance of a ſavage, than a man; but he was of conſiderable ſervice to us, although he had almoſt wholly forgot his mother tongue. He aſſured us that ſince he had firſt reſided here, far from having ſeen any Frenchmen, no ſtranger had arrived who was born nearer France, than an Italian, who paſſed by this place fourteen years ago, and of whom he had never afterwards heard. We were much pleaſed with this man's recovering in ſome meaſure his native language, and we learned from him many things, which we could with difficulty have been informed of by any other, than a Frenchman.

Theſe mines of Swapavara are thirty miles diſtant from Torno, and fifteen from Konges, (a Swediſh mile is always equal to three French leagues.) They were opened about ſeven-and-twenty years ago by a Laplander, called ——— to whom a ſmall rent of four crowns and two barrels of meal is paid: he is exempt from every tax. Theſe mines were formerly better wrought than they are now; formerly they had conſtantly a hundred men working here, but at preſent one only ſees ten or twelve. The copper found here, is however the beſt in Sweden; but ſo deſerted and ſo frightful is the country, that there are very few perſons who can remain in it. No body but the Laplanders can remain here, and they reſide in the neighbourhood of the mines, only during the winter, as, in ſummer, they are obliged to leave the country on account of the heat, and the gnats, which the Swedes call *alcaneras* and which are worſe, a thouſand times, than all the plagues of Egypt. They retire to the mountains in the neighbourhood of the weſtern ſea, for the purpoſe of fiſhing more conveniently, and finding more eaſily nouriſhment for their rein-deer, who live upon a little white and tender moſs, which grows in ſummer on the Sellicean mountains, which ſeparate Norway from Lapland, in the moſt northern regions.

We went next day, Wedneſday, to view the mines, which were fully half a league diſtant from our cabin. We admired the works and the excavated abyſs which penetrated even to the centre of the earth, for the purpoſe of ſeeking, almoſt in hell itſelf, materials for the gratification of luxury and vanity. The greateſt number of theſe pits were full of ice, and ſome of them were clothed from head to foot, with a coat of ice ſo thick, that even the largeſt ſtones which we amuſed ourſelves with throwing at them, far from making any breach, did not leave the ſmalleſt mark of the place where they had been ſtruck; and when they fell to the bottom we ſaw them roll and rebound without making the ſlighteſt impreſſion on the ice. And we were at this period in the hotteſt of the dog-days; but what is here called a violent ſummer would be reckoned in France a very ſevere winter.

The rock does not furniſh the metal in every part, but it is found in veins; and when once one is diſcovered, it is followed with as much care as it was formerly ſought after. For this purpoſe, fire is either employed to ſoften the rock, or powder to blow it to pieces; the latter mode is by far the moſt troubleſome, but it is beyond meaſure more uſeful. We took ſtones of all colours, yellow, blue, green, and violet; but the laſt appeared to us by far the beſt, and the fulleſt of metal.

We made a trial of ſeveral pieces of loadſtone which we found upon the rock; but they had loſt almoſt all their power by the fires which had been made above or below;

which prevented us from taking any away with us, as we thought it better to wait till our return, when we could procure it from the iron-mine. After having inveſtigated all the machines and pumps employed for raiſing the water, we contemplated at our leiſure all the mountains covered with ſnow that ſurrounded us. It is upon theſe rocks, that the Laplanders live during winter; and this country has been in their poſſeſſion, ſince the diviſion of Lapland, which took place in the reign of Guſtavus Adolphus, father of Queen Chriſtina. Theſe lands and mountains belong to them excluſively; and to mark their property, they have their names written upon ſome ſtones, or cut out in ſome parts of the mountain, which they have had in their poſſeſſion, or which they have inhabited. Such are the rocks of Lupawara, Kerquerol, Kilavara, Lung, Dondere, or rock of Thunder, which have furniſhed names to the families of Laplanders which dwell upon them, and which are only diſtinguiſhed in this country by the ſurnames that theſe rocks furniſh them with. Theſe mountains are ſometimes ſeven or eight leagues in length; and although they remain always upon the ſame rock, they do not heſitate often to ſhift their places, when neceſſity leads them to do ſo, and when their rein-deer have conſumed all the moſs which was near their habitations. Although ſome Laplanders have, during the winter, certain fixed places of reſidence, there are many more who conſtantly wander, and whoſe habitations cannot be diſcovered; they are ſometimes in the woods, ſometimes on the lakes, juſt as they have need of hunting or fiſhing, and they are never to be ſeen, except when they attend the fairs in winter, for the purpoſe of bartering ſkins for ſome other article which they ſtand in need of, and for carrying the tribute which they pay to the King of Sweden, but from which they might eaſily exempt themſelves, if they did not wiſh to attend theſe fairs. But the need which they have of iron, ſteel, cordage, and knives, and other articles of this nature, oblige them to attend theſe fairs, at which they receive the commodities they are in want of. The tribute which they pay is alſo extremely ſmall. The richeſt among them, when they have a thouſand or twelve hundred rein-deer, which is the caſe with ſome, pay generally only two or three crowns at the moſt.

After being amply informed on all theſe topics, we began to return to our hut, and ſaw on the road thoſe forges where the copper is firſt founded. Here the groſſeſt alloy is ſeparated, and when it has been long enough in the foundery to have all its impurities thrown out, before taking out the copper at the bottom, they lift up ſeveral ſheets, which they call *roſettes*, in which there is only one half of copper, and which are afterwards placed in the furnace, to remove the quantity of droſs which ſtill remains. This is the firſt ſhape which is given to it here; but at Konges, it is paſſed three times through the fire, that it may be thoroughly purified, and rendered fit to take that form under the hammer, which is wiſhed to be given to it.

On Thurſday a prieſt of the Laplanders arrived with four of that people, for the purpoſe of attending next day, one of the days of religious exerciſe eſtabliſhed throughout all Sweden, to thank God for the victories gained by them on that day.

Theſe were the firſt Laplanders we had ſeen, and the ſight of them gave us much ſatisfaction. They came to barter fiſh for tobacco. We regarded them attentively from head to foot: they are made quite differently from other men. The talleſt of them is not more than three cubits high; and I know not any figure more truly laughable. They have large heads, broad and flat faces, level noſes, ſmall eyes, large mouths, and thick beards deſcending to their ſtomach. All their limbs are proportioned to their littleneſs of body; their legs are thin, their arms long, and the whole of this little machine ſeems to move on ſprings. Their winter dreſs conſiſts of the ſkin of a rein-deer, made like a ſack deſcending to the knees, and tied round the thighs, with a ſaſh

of leather adorned with ſmall plates of ſilver; the ſhoes, gloves, and boots of the fameſt uff: and this has led ſeveral hiſtorians to relate, that there were men in the northern regions, habited like beaſts, and who wore no other covering than that which nature had given them. They have always a purſe made of the entrails of the rein-deer, which hangs upon their breaſt, and in which they keep a ſpoon. They change this dreſs in ſummer, and take a lighter, which is generally formed of the ſkins of birds whom they flay for the purpoſe of defending themſelves againſt the gnats. They have always above this a ſack of coarſe or whitiſh gray cloth, with which they cover themſelves; for they are quite ignorant of the uſe of linen.

They cover the head with a cap, which is generally made of the ſkin of a bird, large as a duck, which they call *loom*, ſignifying in their language *lame*, becauſe this bird cannot walk; they place it on their heads in ſuch a manner, that the birds's head falls over their brow, and its wings cover their ears.

Such, Sir, is the deſcription of this little animal, called a Laplander; and, it may be ſaid, that, after the monkey, he approaches the neareſt to man. We interrogated them on ſeveral ſubjects on which we wiſhed for information, and, in particular we aſked them where we could find their comrades. Theſe people gave us every information. They told us that the Laplanders began to deſcend from the mountains ſituated near the Frozen Ocean, from whence the heat and the flies had driven them, and ſpread themſelves towards the lake Tornotracs, where the river Torno takes its riſe, for the purpoſe of fiſhing a ſhort time, till, about Saint Bartholomew's day, by which time they arrive at the mountains of Swapavara, Kilavan, and others, where the cold begins to be felt, and where they intend to paſs the winter. They aſſured us, that we ſhould be certain of meeting with ſome of the richeſt of the Laplanders there, and that, during the ſeven or eight days which it would take us to travel thither, they would arrive in thoſe places. They added, that, for their parts, they had remained the whole ſummer, in the neighbourhood of the mine and the lakes around it, having found ſufficient nouriſhment for fifteen or twenty rein-deer, which every one was in poſſeſſion of, and being too poor to undertake a journey of fifteen days, for which proviſions muſt be procured, which they had not in their power to do, in conſequence of their having been unable to live away from the ponds which furniſhed them daily with their ſubſiſtence.

On Friday, the fifteenth day of Auguſt, it was extremely cold, and ſnow fell on the neighbouring mountains. We had a long converſation with the prieſt, when he had finiſhed the two ſermons which he delivered this day, the one of which was in the Finniſh, the other, in the Lapponian language. He fortunately for us, ſpoke pretty good Latin, and we interrogated him on every ſubject, which he could be beſt acquainted with, ſuch as baptiſm, marriage, and funerals. He told us, that, with reſpect to the firſt, the Laplanders were Chriſtians and baptiſed; but the majority were ſo only in form, and they retained ſo much of their old ſuperſtition, that it might be ſaid of them, they had only the name of Chriſtians, and they were ſtill Pagans in their hearts.

The Laplanders carry their children to the prieſt for baptiſm, a ſhort time after they are born; if, in winter, they carry them in their ſledges, and if in ſummer, they place them upon the rein-deer, in their cradles filled with moſs, which are made of the bark of the birch-tree, and in a very peculiar manner. On this occaſion, they generally make a preſent to the prieſt, a pair of gloves bordered in certain places with feathers of the *loom*, which are violet, ſtreaked with white, and of a very beautiful colour. As ſoon as the child is baptiſed, the father makes it a preſent of a female rein-deer

and whatever this rein-deer, which they call *pannikcis*, produces in milk, cheese, or any thing else, belongs to the infant, if a daughter, and forms her portion when she is married. There are some also who make a present to their children of a deer when they perceive the first tooth; and all the deer which are produced from this one are distinguished by a particular mark. They change the name which the child has received in baptism when they are unhappy; and on the first day of their marriage they lie together in the same hut, and cares their wives in the presence of every one.

Respecting marriage, he told us that the Laplanders married their daughters late, though they had several offers, when it was known in the country that they had a number of deer which had been produced from those which their father had given them when they were baptised, and when they had their first teeth; for here this is all that they carry with them: and the son-in-law, far from receiving any thing from his father-in-law, is obliged to purchase the daughter by presents. They generally begin, like the birds, to make love in April.

When the lover has seen some daughter whom he wishes to marry, he must take care to be furnished with a quantity of spirituous liquor when he visits the father or the nearest relation to make his request: this is the only way of making love in this country; and a marriage is never concluded until several bottles of spirits have been drank, and a considerable quantity of tobacco smoked. The more amorous a lover is, the greater quantity of spirits does he carry; and it is impossible to take a more effectual method of displaying the strength of his passion. They give a particular name to the spirituous liquor which the lover carries to the agreement, and call it the happy arrival of wine, or *soubbouvin, the lover's wine.* It is a custom among the Laplanders to affiance their children long before they are married; they do so with the intention of making the lover continue his presents; and if he wishes to succeed in his enterprise, he must not fail to continue sprinkling his love with such a delightful beverage. At length, after having a year or two performed all the necessary ceremonies, the marriage is sometimes concluded.

Formerly the Laplanders had a mode of marriage quite peculiar, whilst they continued buried in the darkness of paganism, which is still observed by some of them. They did not carry the parties before the priest, but the parents married them at home, without any other ceremony than that of striking some sparks of fire by means of a flint: they believed that there were no figure more mysterious and better fitted than this to represent the nature of marriage; for as the stone contains within itself the sparks of fire, which do not appear except when it approaches iron, so, say they, there remains a principle of life unseen in both sexes which only can be perceived when they are united.

I believe, Sir, that you will not think this very bad reasoning in Laplanders; and there are many men acute enough who would feel considerable difficulty in giving so apposite a comparison. But I know not whether you will consider the following reasoning to be equally excellent.

I have already mentioned that when a daughter is known in the country to have a number of rein-deer, she does not want suitors; but I did not tell you, Sir, that this property is all that they expect in a wife, without giving themselves any trouble whether she is handsome or not; whether she has wit, or is destitute of it; or even whether she be a maid, or whether another has previously received any marks of her love. But what you will admire still more, and what at first surprised me, is, that these people, far from making a monster of this virginity, believe those girls who have lost it ought to be the more anxiously sought after; and that poor as they are, which often happens, they frequently

frequently prefer them to the rich, who are ſtill maids, or at leaſt who would be conſidered ſuch. But it is neceſſary to make this diſtinction, Sir, that theſe girls, of whom I am ſpeaking, muſt have granted their favours to thoſe ſtrangers who arrive here in winter for the purpoſe of trade, and not to Laplanders. From hence they infer, that becauſe a man, whom they believe to be richer and poſſeſſed of a better taſte than themſelves, has been anxious to give marks of his love for a girl of their country, ſhe muſt therefore be poſſeſſed of ſome ſecret merit, of which, though they are at preſent ignorant, they will in time become ſenſible. So keen are they for theſe kinds of morſels, that when they come ſometimes during the winter to the city of Torno, and find a girl with child, not only do they forget their intereſts, in being willing to take her without property, but even after ſhe has laid in they pay for her to her parents as much as they can afford.

I know many perſons, Sir, who would be charitable enough to make the fortunes in this manner of a number of poor girls, and who would not aſk any thing better than to procure them, without being put to much trouble, advantageous offers. If this faſhion were to be adopted in France, one would not ſee ſo many girls remain ſo long unmarried: the fathers, whoſe purſes are tied with a triple knot, would not be ſo much tormented, and the girls themſelves would always have in their power a method by which they could eſcape from the captivity in which they are held. But I do not believe, Sir, that although the fathers would do all in their power, it would be very eaſy to introduce it.

As the Laplanders are naturally ignorant of almoſt all kinds of diſeaſes, they have not been deſirous of making ſome to themſelves like us. Jealouſy and the fear of cuckoldom give them no uneaſineſs: theſe evils, which torment ſo many among us, are to them unknown; and I do not believe there is any word in their language to expreſs the idea of a cuckold: and one may ſay jocularly with the Spaniard, in ſpeaking of paſt ages and the preſent,

Paſſò lo de oro,
Paſſò lo de plata,
Paſſò lo de hierro.
Vive lo de cuerno.

And while theſe people are bringing back the golden, we are making one to ourſelves of horn. In fact, Sir, you are now to behold among them that which I believe took place in the days of Saturn, namely, a community of poſſeſſions which will aſtoniſh you. You have ſeen that the Laplanders are what we call cuckolds before marriage, and you are now to be convinced that they are no leſs ſo after it.

When the marriage is conſummated the huſband does not carry away his wife, but remains one year with his father-in-law, at the end of which period he goes to ſettle himſelf where he pleaſes, and carries with him all that belongs to his wife. The preſents even which he made to his father-in-law during the courtſhip are given back, and the parents repay thoſe which have been made them by ſome rein-deer, according to their ability.

I have ſhown you, Sir, that ſtrangers have a great privilege in this country, which is that of honouring the daughters on their approach: they have another, which is not leſs conſiderable, that of partaking with the Laplanders a ſhare of their beds and their wives. When a ſtranger arrives in their huts, they receive him in the beſt manner they are able, and think they treat him moſt kindly if they have a glaſs of ſpirits to give him; but after the refreſhment, when the ſtranger they receive is reſpectable, and they wiſh to be kind to him, they make their wives and their daughters approach, and they think themſelves

themſelves highly honoured if the ſtranger behave to them in the ſame manner they do themſelves; and as for the wives and daughters, they make no ſcruple of giving the viſitor all that he deſires; and they believe that he does them as much honour as their huſbands and fathers.

As this mode of behaviour ſurpriſed me much, and as I had never an opportunity of experiencing it, I procured the moſt exact information in my power, and learnt ſeveral facts of this nature. I will then tell you what I have been aſſured is really true.

The Frenchman whom we found at the mines of Swampavara, who was a ſimple man, and I believe incapable of contriving a ſtory, aſſured us that to pleaſe a number of Laplanders he had aſſiſted them in their conjugal duty; and to ſhow us how theſe people had uſed means to induce him to take this trouble, he told us that one day, after having drunk ſome glaſſes of ſpirits with a Laplander, he was ſolicited by this man to lie with his wife, who was then preſent with all the family; and that upon refuſing, which he did in the beſt manner he could, the Laplander not finding his excuſes ſatisfactory, took his wife and the Frenchman, and having thrown them both upon a bed, he went out of the room and locked the door, begging of the Frenchman, by every argument he could think of, to do in his place that which he was accuſtomed to do himſelf.

The ſtory which happened to Joannes Tornæus, prieſt of the Laplanders, of whom I have already ſpoken, is no leſs remarkable. It was related to us by the ſame prieſt who had been his curate in Lapland, and who had lived under him more than fifteen years. A Laplander, he told us, one of the richeſt and moſt conſiderable in the Lapland of Torno, wiſhed that his bed was honoured by his paſtor; he knew no better method of multiplying his cattle, and of drawing down the bleſſing of heaven upon all his family: he begged of him ſeveral times to do him that honour; but the paſtor, from conſcience, or ſome other motive, wiſhed to avoid it, and always repreſented to him that this was not the moſt certain method of rendering the Deity propitious. The Laplander by no means coincided with this mode of reaſoning; and one day when he found the paſtor alone, he conjured him on his knees, and by all that he held ſacred among the gods whom he worſhipped, not to refuſe him the favour that he requeſted; and adding promiſes to his intreaties, he preſented him with ſix crowns, which he was willing to give him if he would debaſe himſelf ſo far as to lie with his wife. The good prieſt doubted ſome time whether he could do it conſcientiouſly, and not wiſhing to refuſe the poor man, he determined that it was better to make him a cuckold, and gain his money, than to drive him to deſpair.

If this adventure had not been related to us by the ſame prieſt, who was at that time his pupil, and who was preſent, I could never have believed it; but he aſſured us of the truth of it in ſo earneſt a manner, that, independent of any conſideration of the manners of the country, I could not doubt it.

This kindneſs which the Laplanders diſplay to their women does not limit itſelf to their paſtors; but agreeable to what has been already mentioned, and what ſhall afterwards be ſhown, extends alſo to ſtrangers of every deſcription.

I will not take any notice, Sir, of a girl whom a magiſtrate of Lapland, who receives the tribute for the King, had a child by. A Laplander purchaſed her of him who had diſhonoured her, for no other reaſon than becauſe ſhe had been able to gain the affection of a ſtranger. Events of this nature are ſo common in this country, that even during a ſhort reſidence among the Laplanders a perſon can ſcarcely fail to be convinced of their reality by his own experience.

They waſh their children in a tub three times a day until they are a year old, and afterwards three times a-week: they have few children, and it ſcarcely ever happens

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that ſix are found in a family. As ſoon as they are born they are waſhed in ſnow till they are deprived of breath, and then they immerſe them in a bath of hot water: I believe they do this for the purpoſe of hardening them to the cold. As ſoon as the mother is delivered ſhe drinks a large draught of oil from the whale, and ſhe believes that it is of great uſe to her. It is eaſy to know when in the cradle of what ſex a child is: if it is a boy, they hang over its head a bow and arrows, or a lance, to teach them, even in the cradle, what ought to be their employment during their lives, and to inform them that it is their duty to render themſelves expert in their exerciſe. Over the cradle of girls they hang the wings of the *jopos*, which they call *rippa*, with the feet and the bill, to inſinuate to them from their infancy the advantages of neatneſs and agility. When the women are pregnant theſe people ſtrike the tabor, for the purpoſe of knowing what ſex the child will be of: they prefer girls, becauſe they receive preſents in marrying them, and they are obliged to purchaſe their wives.

Diſeaſes, as I have already mentioned, are almoſt unknown among the Laplanders, and when they are affected with any, Nature is ſtrong enough to cure them herſelf; and without the aſſiſtance of phyſicians they ſoon recover their health: however they employ ſome remedies, ſuch as the root of the moſs, which they call *jeeſt*, or that which is denominated ſtony angelica. The ſap which oozes from their fir-trees ſerves them for plaſters, and the cheeſe of the rein-deer is their divine ointment. They apply theſe remedies in various manners. They have the gall of the wolf, which they mix with gunpowder, in ſpirits. When the cold has frozen ſome part of their bodies, they ſpread the cheeſe cut in ſlices over the part affected, and they are cured by it. The ſecond method of employing the cheeſe, both for external and internal remedies, is by inſerting a red-hot iron into the cheeſe, which by its heat draws out a kind of oil, with which they rub themſelves on the part affected; and this remedy is always followed with a certain and marvellous ſucceſs: it ſtrengthens the breaſt, removes the cough, and is good for all contuſions; but the uſual remedy for the moſt dangerous diſeaſes is fire: they apply a piece of charcoal perfectly red to the wound, and ſuffer it to remain as long as they are able, that every thing impure in the ſore may be eaten out. This is a cuſtom among the Turks: they have no remedy which they conceive more ſovereign.

Thoſe who are fortunate enough in France and other countries to arrive at an extreme old age, are obliged to ſuffer a great deal of inconvenience which it brings along with it; but the Laplanders are totally exempted from them, and they feel no infirmity in this ſtate, except a ſmall diminution of their ordinary vigour: it is even impoſſible to diſtinguiſh the old men from the young; and white heads are very rarely to be ſeen in this country: they always retain their own hair, which is generally red. But what is ſtill more remarkable, one meets with very few old men who are not blind: their ſight, naturally weak, is unable any longer to ſupport either the glare of the ſnow, with which the earth is almoſt conſtantly covered, or the continual ſmoke iſſuing from the fire which is always burning in the middle of their huts; they conſequently become blind in their old age.

When a perſon is ſick, they have a cuſtom of playing on a tabor, of which I ſhall treat afterwards, for the purpoſe of diſcovering whether the diſeaſe will terminate fatally; and when they ſuppoſe themſelves certain of unhappy conſequences, and that the ſick perſon is drawing near to his end, they gather themſelves round his bed; and that they may aſſiſt the ſoul of the dying in its paſſage to the next world, they bring to him as much ſpirits as they can, and drink as long as it laſts, to conſole themſelves for the loſs of their friend, and to excite them to weep. No ſooner is he dead than they abandon the houſe, and even demoliſh it, leſt that which remains of the ſoul of the deceaſed,

ceaſed, which the ancients called *manes*, ſhould do them any injury. The coffin conſiſts of a tree hollowed out, or even ſometimes of their ſledge, into which they put all that the dead perſon had moſt valuable, as his bow, his arrows, and his lance, with the intention that ſhould he one day return to life, he may be able to exerciſe his former profeſſion. Some of them are even ſuch gallant chriſtians as to confound chriſtianity with their ancient ſuperſtitions; for having heard their prieſts tell that we ſhould one day ariſe again from the dead, they put into the coffin of the dead perſon his hatchet, a flint, and a piece of iron to ſtrike a fire, (Laplanders never travel without theſe neceſſaries,) that when he ariſes he may be able to cut down trees, level rocks, and burn all the obſtacles that he may meet with in his road to heaven. You ſee, Sir, that notwithſtanding all their errors, theſe people move thitherward as much as poſſible; they wiſh to arrive at it either peaceably or by force, ſo that it may be ſaid, *His per ferrum et ignes ad cœlos graſſari conſtitutum*, and that they expect by iron and fire to enter the kingdom of heaven.

They do not always inter their dead in cemeteries, but very often in foreſts and caverns: they ſprinkle the place with ſpirits; all the mourners drink of them; and three days after the funeral they kill the rein-deer which had borne the dead to the burying-place, and a feaſt is made of it to all the company preſent: the bones are not thrown away, but gathered carefully for the purpoſe of burying at the ſide of the deceaſed. It is at this repaſt that they drink the *paligavin*, that is, fortunate liquor, becauſe they drink in honour of a perſon whom they believe to be happy.

Succeſſions are ſettled nearly in the ſame manner as in Sweden: the widow takes the half; and if the deceaſed has left any property, the boy takes two-thirds of it, and leaves the reſt to his ſiſter.

We were very earneſtly engaged in this converſation, when we were informed that ſome Laplanders with their rein-deer were obſerved approaching on the tops of the mountains: we ſallied out to meet them, that we might have the pleaſure of ſeeing their equipage and their march; but we fell in with three or four perſons only who carried on their deer ſome dried fiſh for ſale at Swapavara. I have long ſpoken to you, Sir, about the rein-deer, without having given you a deſcription of that animal, which I have already ſo often alluded to. It is but reaſonable, therefore, that I ſhould now proceed to gratify your curioſity, as I have at preſent gratified my own.

Rheen is a Swediſh word by which they have been diſtinguiſhed, either on account of its neatneſs or his ſwiftneſs; for *rhen* ſignifies *neat*, and *renna* means *to run*, in that language. The Romans were totally ignorant of this animal, and the modern Latins call it *rangifer*. I cannot give you any other reaſon for this, than that the Swedes formerly called this animal *rangi*, to which word *fera* was added, as if they had ſaid, *the animal called rangi*. Although I do not wiſh to ſay that the horns of this animal, which ſhoot out in the form of large branches, have led them to give it this appellation; for in that caſe they would rather have called it *ramifer* than *rangifer*. Whatever may be in this, Sir, one thing is certain, that although this animal is almoſt like a ſtag, it nevertheleſs differs from it in ſome reſpects. The rein-deer is larger, but the horns are totally different; they riſe to a great height, and become crooked in the middle, forming a kind of circle round the head, which is covered with hair from top to bottom, of the colour of the ſkin, and is full of blood throughout; ſo that if it is hard preſſed by the hand, the animal ſhows by its conduct that it feels pain in that part. But that which this animal has in particular to diſtinguiſh it from all others, is the great quantity of horns with which Nature has provided them for their defence againſt wild beaſts. The ſtag has only two horns, from which ſprout a number of ſharp points; but the rein-deer has another in the centre of the forehead, which produces the ſame appearance with that which has been

painted on the head of the unicorn, beſides two others which branch over the eyes and fall upon the mouth. But all theſe branches ſpring from one root, although they take different roads, and aſſume different figures; which circumſtance gives them ſo much uneaſineſs that they can with difficulty graze, which induces them rather to feed upon the buds of trees, which they are able to ſeize with leſs difficulty.

The colour of their hair is blacker than that of the ſtag, particularly when they are young; and at that time they are almoſt as black as the wild rein-deer, which are always larger, ſtronger, and blacker than thoſe which are tamed.

Although their limbs are not ſo ſlender as thoſe of the ſtag, they nevertheleſs ſurpaſs it in ſwiftneſs: their feet are much ſerrated and almoſt round; but that which is moſt remarkable in this animal is, that all its bones, and particularly the joints of the foot, crack as if one was breaking nuts, and they make a noiſe ſo loud, that one can hear this animal at almoſt as great a diſtance as one can ſee it. It is alſo obſervable in the rein-deer, that although they have the cloven foot they do not chew the cud; and that they have no gall, but only a ſmall black mark in the liver without any bitterneſs.

And although theſe animals are naturally ſavage, the Laplanders have ſo completely found means to tame them and domeſticate them, that there is not an individual in the country who is not poſſeſſed of troops of them, like thoſe of ſheep: they nevertheleſs leave great numbers wild in the woods, and it is theſe whom the Laplanders cruelly hunt, both for their ſkin, which is much more eſteemed than that of the domeſtic deer, and for their fleſh, which is much more ſavoury. There are even ſome of theſe animals half-wild and half-tamed; and the Laplanders allow their female deer in rutting-time to go into the woods, and thoſe which are produced by this connection are called by a particular name: they denominate them *kattiagiar*, and they grow much larger and ſtronger than the others, and are conſequently fitter for the ſledge.

Lapland nouriſhes no other domeſtic animal than the rein-deer; but in this creature alone as many uſeful qualities are found as are to be met with in all thoſe which we poſſeſs. They throw away no part of the animal; but make uſe of the hair, the ſkin, the fleſh, the bones, the marrow, the blood, and the nerves.

The ſkin ſerves to protect them from the inclemency of the weather, and in winter they wear it covered with its hair, while in ſummer they put on another from which it has been removed. The fleſh of this animal is full of ſap, fat, and extremely nouriſhing; and the Laplanders never eat any other fleſh than that of the rein-deer: its bones are of aſtoniſhing uſe to them, for making their croſs-bows and bows, for arming their arrows, for making their ſpoons, and for adorning every thing that they make. Its tongue and the marrow of its bones are their greateſt delicacies; and lovers carry theſe parts to their miſtreſſes as the moſt valuable preſents, which are uſually accompanied with the fleſh of the bear and the caſtor. They frequently drink its blood, but they generally preſerve it in its bladder, which they expoſe to the cold, and allow to become denſe and aſſume a regular form in this ſtate; and when they wiſh to make ſoup, they cut out from it as much as they deſire, and boil it along with fiſh. They have no other thread than that which they draw from the nerves of this animal, and which they extract from its cheeks: they employ the fineſt to ſew their clothes with, and the coarſeſt to join the blanks of their barks. But not only does this animal furniſh the Laplanders with food and clothing, it alſo affords them drink: the milk of the rein-deer is the only beverage that they poſſeſs; and becauſe it is extremely fat and quite thick, they are obliged to mix it with nearly an equal quantity of water: they only draw a gallon of milk daily from the beſt rein-deer, which give no milk except when they have a young one: they make very nutritious cheeſes from it; and the poor inhabitants, who cannot afford

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to kill a deer for its fleſh, live on nothing elſe than its cheeſe: theſe cheeſes are fat, and have a very ſtrong ſmell; but being made and eaten without ſalt, they are quite taſteleſs.

The greateſt advantage derived from the rein-deer is their uſefulneſs in travelling, and in carrying burdens. We had ſo often heard with aſtoniſhment of the manner in which the Laplanders employ theſe animals in travelling, that we wiſhed to gratify our curioſity upon the ſpot, and to ſee in what manner the deer are fixed to the ſledge: we immediately ordered them to bring us one of theſe machines, which the Laplanders call *pulaha*, and which we denominate a ſledge, and which I lately deſcribed: we made them fix the rein-deer before, at the ſame diſtance which our horſes generally are, to that piece of wood, of which I have already ſpoken, and which they call *jocolaps*: it has no other collar than a piece of ſkin covered with hair, from which a piece deſcends towards the breaſt, and paſſes under the belly between the legs, and is attached to a hold which is in the fore-part of the ſledge. The Laplander has no other guide than a cord fixed to the root of the animal's horns, which he throws on the back of the animal, ſometimes on one ſide, ſometimes on the other, and directs it in the road by drawing to that ſide on which he wiſhes it to turn.

We travelled to-day, for the firſt time, in theſe ſledges with inconceivable pleaſure; and it is in this carriage that they perform a long journey in a ſhort time: they advance more or leſs quickly according to the ſtrength and vigour of the animal. The Laplanders rear them intentionally from a croſs-breed, which is produced from a wild male and a tame female, as I have already mentioned, and they are far more ſwift than the others, and more fit for travelling. Zieglerus ſays that a rein-deer can in one day three times change the horizon, that is, can three times arrive at the moſt diſtant mark which can be perceived. This length of road, though very conſiderable, and not ill expreſſed, does not furniſh us with a ſufficient idea of the ſwiftneſs of the rein-deer: the Laplanders expreſs it more exactly, when they ſay that it can travel twenty Swediſh miles in a day, or fifty leagues, in only calculating two leagues and a half of French meaſure to one mile of Swediſh. The Swediſh mile is 6600 toiſes long, and the French league is 2600; however, the Swediſh mile is generally calculated as equal to three French leagues. This computation is more ſatisfactory than the other; for as in this country the day may be extended to any length, and as the Laplanders in their calculations do not make any diſtinction betwixt the natural day of twenty-four hours, and the day in which a traveller is on his journey, it will be more correct, for the purpoſe of giving a clear idea of the diſtance which a deer can run in an hour, to ſtate, both from the preceding computation and my own experience, that thoſe which are to be met with in Lapland, *kimi lapmarch*, and which are celebrated for being the ſwifteſt and ſtrongeſt, can make, when puſhed, ſix French leagues in an hour; but for this purpoſe the ſnow muſt be hard and frozen. It is true the animal cannot continue to travel long at this rate, and that it requires reſt after ſeven or eight hours of toil. Thoſe who wiſh to go farther do not travel ſo faſt, but continue longer on their way: the animals in this caſe ſupport the fatigue during twelve or thirteen hours, at the end of which it becomes neceſſary to allow them reſt for a day or two, unleſs the traveller wiſh them to die in the ſledge.

This diſtance you ſee, Sir, is very conſiderable; and if there were poſts of the rein-deer eſtabliſhed in France, it would not be very difficult to travel from Paris to Lyons in leſs than twenty-ſix hours: the diligence would be delightful; but although it appears that this mode of travelling would be very convenient, yet it would undoubtedly be extremely fatiguing: the leaps which it would be neceſſary to take; the ditches over which it would be neceſſary to ſkip; the ſtones which muſt be paſſed over; and

the conſtant toil which the traveller would be expoſed to in preventing himſelf from falling, and of raiſing himſelf up when overturned, would make one deſirous of travelling more ſmoothly, and of running leſs riſk.

Although theſe animals ſuffer themſelves to be conducted with great docility, there are nevertheleſs many of them reſtive and almoſt untameable; ſo that when you puſh them too hard, or wiſh them to travel farther than they themſelves incline, they immediately turn round, and erecting themſelves on their hinder feet, they attack with ſuch fury the driver in the ſledge, who can neither defend himſelf, nor eſcape from it, on account of his being tied, that they often break his head, and ſometimes deſtroy him, with their fore-feet, in which they have ſo much ſtrength, that they have no other means of defence againſt the wolves. The Laplanders, to ward off the blows of theſe animals, have no other remedy than to turn themſelves towards the ground, and to cover themſelves with their ſledges, until the anger of the rein-deer has been ſomewhat appeaſed.

They have alſo another kind of ſledge, much finer, and made in a different manner, which they call *racdakeris*: they make uſe of it to ſeek after their wood, and to remove their property, when they change their places of abode.

Such, Sir, is the manner in which the Laplanders travel in winter, when the ſnow completely covers the ground, and when the cold has covered it with a ſlippery cruſt. In ſummer they are obliged to travel on foot, for the deer are not ſtrong enough to carry them; and they never yoke them in chariots, which is a practice they are totally ignorant of, on account of the badneſs of their roads: they however ſtill carry burdens, and the Laplanders take a ſtrong bark of the birch-tree, which they bend into the form of a bow, and place upon its broadeſt part that which they are to carry, which does not exceed on every ſide forty pounds weight. In this manner do they carry children in ſummer to be baptiſed, and they themſelves follow behind.

The moſt ordinary food of the rein-deer conſiſts of a little white moſs extremely fine, which grows in abundance throughout all Lapland; and when the earth is wholly covered with ſnow, nature has imparted to theſe animals an inſtinct, which enables them to know the place where it is to be found under the ſnow; and whenever they diſcover it they make a large opening in the ſnow with their fore-feet, which they do with a ſurpriſing ſwiftneſs; but when the cold has ſo hardened the ſnow that it becomes ice itſelf, the deer then eat a certain moſs, like a ſpider's web, which hangs from the pine-tree, and which the Laplanders call *luat*.

I believe I have already ſaid that the rein-deer have no milk except when they have a young one, which ſucks three months; and ſoon as the young one dies, they have no more milk. When they wiſh them to eat, they place before them the pods of the pine-tree; and when they teaſe and irritate the mother, ſhe ſtrikes them with her horns.

It is ſaid of theſe animals that they ſpeak in their ears if they wiſh them to go on one ſide or the other: this is completely falſe. They travel almoſt conſtantly with a conductor, who leads ſix of them; and when any one wiſhes to travel to any place, if he can find a rein-deer on its return to that place to which he wiſhes to go, he will not require any guide, as the deer will take him to the place of deſtination without any guide, and that too although there be no regular road, and the diſtance be more than forty leagues.

On Saturday we ſet out to go on foot to the prieſt's houſe, which was about five miles diſtant, and from whence we afterwards determined to travel north-weſt, and go to Tornotreſch, where we were to find the Laplanders whom we were in ſearch of. We were no ſooner out of Swapavara than we had ſupper prepared for us: we killed three or four birds, which are called in this country *fiælripa*, or *birds of the mountain*, and which the Greeks denominated *lagopos*, or *hairy-footed*: it is of the ſize of a hen,

and during ſummer has the plumage of a pheaſant, but more of a brown colour, and is diſtinguiſhed in certain places by whitiſh ſpots; in winter it is quite black. The male imitates, while flying, the noiſe of a man who laughs extremely loud: it ſleeps rarely among trees; and further, I know no game of ſuch an agreeable taſte: it has at the ſame time the delicacy of the pheaſant and the tenderneſs of the partridge. It is found in great plenty on the mountains of this country.

Two miles diſtant from Swapavara we met with the barque of the Laplanders to whom we had ſpoken the day before, and who were to conduct us to Tornotreſch: they had been fiſhing the whole night, and brought us very excellent ſalmon-trout, which are called in this country *ærlax*. From thence, continuing our journey by water, we encamped on a little height. We paſſed the night in the middle of the wood, which we found very agreeable; for the cold being extremely violent, we were obliged to make ſuch a large fire to protect us from wild beaſts, and eſpecially the bears, that we this day ſet fire to the foreſt. We forgot to extinguiſh it on our departure, and it extended with ſuch rapidity, by means of a tempeſt, that on our return fifteen days after we found it ſtill burning in certain parts of the foreſt, where it had burned with ſufficient ſucceſs: but this did harm to nobody; and incendiaries meet with no puniſhment in this country.

We travelled only half a mile on Sunday, in conſequence of torrents and an impetuous wind which conſtantly hindered us; and during the time which we took to travel this length, we could not advance four ſteps without ſeeing or hearing extremely large pines fall, which in falling made a dreadful noiſe, which reſounded throughout the whole foreſt. This tempeſt, which laſted the whole of both day and night, obliged us to ſtop, and to paſs this night as we had done the laſt, with equally large fires, which however we made with more precaution, that every thing might not be burned on our route: this led our boatmen to ſay, that four Frenchmen would be ſufficient to burn the whole country in eight days.

Next day, Monday, unwilling to be expoſed to the north wind without advancing, we failed not, notwithſtanding the continuance of the tempeſt, to proceed on our journey upon a lake which had the appearance of an agitated ſea, ſo high were the waves; and after five or ſix hours of exertion we arrived, after travelling three-quarters of a mile, at the church of the Laplanders, where the prieſt lived.

This church is called Chucaſdes, and it is the place where the fair of the Laplanders during winter is held, to which they come for the purpoſe of bartering the ſkins of the rein-deer, of ermines, martins, and minevers, for ſpirits, tobacco, and *valmar*, which is a kind of coarſe cloth with which they cover themſelves, and ſurround their huts. The merchants of Torno and the neighbouring country do not fail to attend on this occaſion, which continues from the Converſion of St. Paul in January to the ſecond day of February. The magiſtrate and the judge of the Laplanders attend in perſon; the one to receive the tribute which they pay to the King of Sweden, and the other to terminate any differences which may ariſe among them, and to puniſh all vicious and abandoned perſons, although it ſeldom happens that any of this deſcription can be found; for they live with each other in great confidence, without ever having heard of thieves, who nevertheleſs would find no difficulty in proſecuting their projects, as the huts, full of various articles, remain quite open during the whole ſummer, while they travel to Norway, where they remain three or four months. They leave in the middle of the woods, on the top of a tree which they have cut, all the neceſſary ammunition, and their being ſtolen is very rarely heard of.

The prieſt, as you may well believe, Sir, is not abſent on this occaſion; and it is at this

this time that he receives the tenths of the ſkins of rein-deer, of cheeſe, of gloves, of ſhoes, and other articles, according to the ability of thoſe who make them preſents.

The Laplanders who have the moſt chriſtianity do not confine themſelves to making preſents to their paſtors, but they alſo make offerings to the church. We have ſeen a number of ſkins of minevers, which hung before the altar, and when they wiſh to ward off ſome diſeaſe which affects their flocks, or to pray to God for proſperity, they carry ſkins of the rein-deer to church, and extend them on the path-way which leads to the altar, and over which the prieſt muſt neceſſarily paſs; and in this manner they believe that they have drawn down the benediction of heaven. The prieſts have a great deal to do at this time; for as the greater part come only at this period, once during the whole year, it becomes neceſſary to perform as much religious buſineſs in eight or fifteen days, as is done in other places throughout the whole year. It is during this time that the majority have their daughters baptiſed, and that they bury the bodies of thoſe who have died during ſummer: for when any one dies whilſt they are at the weſtern ſea, or in ſome other part of Lapland, as they are unable to carry the body on account of the badneſs of the roads, and as they have no opportunity of removing them, they inter them near the ſpot where they expired, either in ſome cavern, or below ſome ſtones, for the purpoſe of taking them up again in winter, when the ſnow allows them an opportunity of conveying them to the church. Others, to prevent the body from putrefying, place them in their coffins under water, which conſiſt, as I have already mentioned, of a tree hollowed out, or of their ſledges, and never draw them out again till they intend to carry them to the burying-ground. They alſo marry at the fair; for as all their friends are preſent on this occaſion, they generally put off the marriage ceremony till this time, for the purpoſe of rendering it more ſolemn, and for procuring more amuſement.

The goods which the Laplanders bring to theſe fairs are rein-deer and their ſkins: they alſo ſell at this time the ſkins of black, red, and white foxes, and otters, *gulonum*, of martins, of caſtors, of ermines, of wolves, of minevers, and bears; beſides the dreſſes of the Laplanders, with boots, gloves, ſhoes, and all ſorts of dried fiſh, and cheeſe from the rein-deer.

They give theſe articles in exchange for ſpirits, coarſe cloths, ſilver, copper, iron, ſulphur, needles, knives, and hides, which are brought to them from Muſcovy. Their goods bear always the ſame price: a rein-deer, of middling value, is ſold for two crowns; four ſkins are equal to one deer; a *limber* of minevers, which conſiſts of forty ſkins, is valued at a crown; the ſkin of a martin the ſame ſum; that of the bear coſts as much, and three white fox ſkins coſt no more. The price of goods is in the ſame manner limited: half an ell of cloth is valued at a crown; a pint of ſpirits as much; a pound of tobacco the ſame price; and when they wiſh to purchaſe articles of ſmaller value, the ſale is concluded by means of one, two, or three ſkins of minevers, according to the value of the commodity.

All theſe affairs are not concluded with the ſame frankneſs as formerly; and as the Laplanders, who conducted themſelves with fidelity, ſaw themſelves cheated, the fear of being ſtill deceived puts them ſo much on their guard, that they rather cheat themſelves than expoſe themſelves to be cheated.

Nothing is a better evidence of the little chriſtianity which the majority of the Laplanders poſſeſs, than the reluctance which they diſplay towards an attendance at church to hear the prieſt, and to aſſiſt in the ſervice. It is neceſſary for the magiſtrate to force them to attend, which he does by ſending men to their huts for the purpoſe of obſerving whether they are there. Some of them to be allowed to abſent themſelves pay money:

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ſome think that they can avoid attendance on ſermon, by ſtating that they were there laſt year; and others ſuppoſe they have a legitimate excuſe in abſenting themſelves, when they ſay, that they belong to another church, which they have already attended. This clearly ſhows, that they are only Chriſtians by means of force, and that they never give any evidences of their religion, except when forced to do ſo.

We were employed during the remainder of this day, and all the morning of Tueſday, in cutting on a ſtone, laſting memorials, which ſhould inform poſterity, that three Frenchmen had continued to travel, till they could go no farther; and that, notwithſtanding the difficulties which they had encountered, and which had frightened many others, and that they had come to erect a trophy at the end of the world, materials having been rather wanting for their further toil, than courage to endure it. The inſcription was the following:

Gallia nos genuit; vidit nos Africa; Gangem
Hauſimus, Europamque oculis luſtravimus omnem;
Caſibus et variis acti terrâque marique,
Hic tandem ſtetimus, nobis ubi defuit orbis.

De Fercourt, De Corberon, Regnard.
18 Auguſti, 1681.

"Gaul begot us; Africa has beheld us; We have explored the Ganges, and "travelled over all Europe, having been expoſed to various accidents, both by ſea and "land, here at length have we arrived, at the fartheſt boundary of the world."

De Fercourt, De Corberon, Regnard.
18th day of Auguſt, 1681.

We cut out theſe verſes upon ſtone and upon wood; and though the ſpot on which we were, was not the beſt place to put them, we left thoſe which we had engraven on the wood and they were placed in the church above the altar. We carried the others with us to place them at the end of the lake of Tornotreſch from whence the Frozen Ocean can be ſeen, and where the world terminates.

When the Laplanders who were employed in conducting us, and in ſhowing us the road, had returned from where they had been ſent, to purchaſe ſome little proviſions, conſiſting of ſeven or eight cheeſes of the rein-deer, and ſome dried fiſh, we left the prieſts at five o'clock in the evening, and ſtopt, for the purpoſe of ſleeping, at an impetuous torrent, which they call Vaccho, where we arrived an hour after midnight. We had the pleaſure, during the whole road, to behold the riſing and the ſetting of ſun at the ſame time. The ſun ſet to-day at eleven o'clock, and roſe at two, whilſt it remained, during the whole as clear as at noon-day. But when the days are longeſt, that is, three weeks before Saint John, and three weeks after, the ſun is conſtantly in ſight, during this period, without touching, in the loweſt parts of his courſe, the tops of the higheſt mountains. He is alſo, during the ſhorteſt days in winter, two entire months, without being viſible; and at Candlemas, the people aſcend to the tops of the higheſt mountains, for the purpoſe of obſerving him to peep forth for an inſtant. Night, however, does not conſtantly endure, as, at mid-day, a little glimmering light breaks forth which continues about two hours. The Laplanders, by the aſſiſtance of this light, and the reflection of the ſnow, with which the whole earth is covered, take this time to go to the chaſe, and to fiſh, which they never leave off, although the rivers and the lakes are completely frozen, and, in ſome places, as thick as the length of a pike:

pike: but they make large apertures in the ice, at ſtated diſtances, and puſh, by means of a pole, which goes below the ice, their nets, from aperture to aperture, and draw them out in the ſame manner. But what is ſtill more ſurpriſing, is, that they often catch ſwallows in their nets, which hold, by means of their claws, themſelves attached to ſome ſmall pieces of wood. They appear dead, when they come out of the water, having no ſymptoms of life; but when they are placed near to the fire, and begin to feel the heat, they recover a little, then clap their wings, and begin to fly, as they do in ſummer. This ſtrange fact has been confirmed to me by all thoſe whom I talked with on the ſubject.

We ſet out on our journey on Wedneſday morning, and after having croſſed to the other ſide of the torrent, we walked a ſhort league on foot. We obſerved on the road a Lapland-hut, compoſed of leaves and turf. All the property was behind the houſe, placed on ſome planks: it conſiſted of ſome ſkins of the rein-deer, ſome utenſils for working with, and ſeveral nets which hung upon a rod. After having examined the whole, we purſued our courſe to the eaſt, in the woods, without any road. We found in the middle, a Lapland-magazine, conſtructed upon four trees, which made a ſquare ſpace. The whole of this edifice, covered with planks, was ſupported upon four pieces of wood, which are generally fir, and from which the Laplanders remove the bark, for the purpoſe of preventing particularly the wolves and the bears from climbing up theſe trees, which they rub over with greaſe and train-oil. It is in this magazine that the Laplanders lay up their whole wealth, which conſiſts of dried fiſh or fleſh of the rein-deer. Theſe fortified habitations are in the middle of the woods, at the diſtance of two or three leagues from the Laplander's hut; the ſame individual will ſometimes have two or three in different places. It is in this manner, that, as they are continually expoſed to the fury of the wild beaſts, they employ their whole addreſs to render their attempts unſucceſsful; but it frequently happens, notwithſtanding all their exertions, that the bears deſtroy all the toil of a Laplander, and eat in one day all that he has collected during a whole year, which actually happened to one whom we met on the lake of Tornotreſch, and whom we again found on our return, extremely diſconſolate at the deſtruction of his magazine by the bears, who had devoured all that it contained.

They have alſo another kind of reſervoir, which they call *nalla*, like the reſt alſo in the middle of the wood, but which is only placed on a ſingle pivot. They cut down a tree ſix or ſeven feet high, and place upon the trunk of it, two pieces of wood acroſs each other, upon which they erect this little edifice, which has the ſame appearance with a pigeon-houſe, and is covered with planks. They have no other ladder, with which they mount to this reſervoir, than the trunk of a tree, in which they cut a kind of ſteps. After having ſtill marched about half-an-hour, we arrived at the borders of the lake, where we found a little Laplander extremely old, with his ſon who was going to fiſh. We aſked queſtions on ſeveral ſubjects, particularly with reſpect to his age, which he was ignorant of; this want of knowledge is general among the Laplanders, who, almoſt every one, not only are ignorant of the year in which they live, but who only know time, by the tranſition from winter to ſummer. We gave him ſome ſpirits and tobacco, and he told us, that having ſeen us from his hut, he retreated into the wood, from whence however he beheld us, and having obſerved, that we had done him no injury, and had carried nothing off, he had ventured to ſally out from his hiding-place, that he might attend to his uſual occupation. The good treatment which we diſplayed to this poor fellow, in giving him tobacco and ſpirits, which are the moſt acceptable preſents which could be made to a Laplander, induced him

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to promiſe, that, on our return, he ſhould take us to his place of reſidence, and ſhow us his rein-deer to the number of ſeventy or eighty, beſides all his little property.

We paſſed on, and travelled, till we arrived at the hut of a Laplander, which was on the ſide where the lake begins to form the river. I have talked along while, Sir, of the houſes of the Laplanders, without telling you what they were: I ſhould now, therefore endeavour to gratify your curioſity.

The Laplanders have no fixed abode, but they go from one place to another, carrying with them their whole property. This change of abode takes place, either for the convenience of fiſhing, by which they ſubſiſt, or for the nouriſhment of their rein-deer, which they ſeek ſomewhere elſe, when it is finiſhed in the place where they lived. They uſually eſtabliſh themſelves in ſummer on the borders of the lakes in the place where the torrents are; and in winter, they remove to the thickeſt places of the wood, where they expect to find a ſufficient quantity of animals in hunting. They have no difficulty in packing up quickly; for in a quarter of an hour they have taken down their whole houſe, and tied all their utenſils upon rein-deer, who are of wonderful uſe to them. They employ on this occaſion, five or ſix, on which they place their whole baggage, as we do, upon horſes, beſides their children, who are unable to travel. The deer go one after the other; the ſecond is attached by means of a long ſtrap, to the neck of the firſt, and the third is tied to that of the ſecond, and ſo on. The father of the family marches behind theſe deer, and precedes all the reſt of his flock which follow him as the ſheep follow the herdſman. When they arrive at a ſpot proper for a reſidence, they unload their animals, and begin to build their houſe. They raiſe four pieces of wood, which are the ſupporters of their whole building; theſe planks are pierced from the bottom to the top, and are joined together by means of another, upon which are placed a number of other planks, which form the whole building, and produce a figure ſhaped like a bell. All theſe planks are employed to ſupport a large cloth, which they call, *woaldmar*, and which forms at the ſame time, the walls and the ſtrength of the houſe. Thoſe who are rich, employ a double covering of cloth, the better to preſerve them from the rain and the wind, whilſt the poor employ turf. The fire is in the middle of the hut, and the ſmoke goes out at a hole, which is left for that purpoſe, at the top. This fire is continually burning, during winter, and during ſummer; on which account, the greater part of the Laplanders loſe their ſight, when they become old. The pot-hanger deſcends from the roof above the fire; ſome of them are made of iron, but the greater part are formed of a branch of the birch tree, at the end of which a hook is fixed. They have always a pot hanging over the fire, and particularly in winter, when they melt the ſnow; and when any one wiſhes to drink, he fills a large ſpoon with ſnow and ſprinkles boiling water upon it, till it is completely melted. The floor of the hut is made of branches of the birch-tree, or the pine, which they throw down in a heap, when they employ them to make their beds of. Such, Sir, are the habitations of the Laplanders. There, the old and the young, the male and the female, the fathers and the children live together: they all ſleep promiſcuouſly and quite naked, upon the ſkins of rein-deer; which frequently produces very ſerious diſorders. The door of the hut is very ſtrait, and ſo low, that it is neceſſary to enter it on the knees; they generally place it towards the ſouth, in order that they may be leſs expoſed to the north-wind.

There is alſo among theſe people another hut, which is fixed, and of a hexagonal form, with pines which they fix the one above the other, and of which the apertures are lined with moſs. Theſe huts belong to the richer individuals, who do not fail to change their places of reſidence like the reſt, but who return always after ſome time

to the ſame place, which is generally in the immediate neighbourhood of a cataract, which affords them a great facility in procuring fiſh.

It was in one of theſe huts, that we paſſed the night: it was covered only with branches interwoven, which were filled with moſs. We met here two Laplanders, whom we ſaluted by giving them our hand and ſaying, *Pouriſt*, which is the Lapponian ſalutation, and means, *Welcome*. Theſe poor people ſaluted us in the ſame manner, and returned our ſalute by the word *Pouriſt oni, You are alſo welcome*. They accompanied theſe words, with their ordinary bow, which they performed in the manner of the Muſcovites, by bending their knees. We did not fail, to give them five or ſix kinds of ſpirits for the purpoſe of becoming acquainted with them; which they took ſo heartily, that they became intoxicated, and their brain beginning to turn, one of them wiſhed to act the ſorcerer, and took his tabor. As this inſtrument is the moſt eſſential point of their ſuperſtition, you no doubt wiſh, Sir, that I ſhould ſpeak to you of their religion.

All the world knows, that the people who lived neareſt to the north, have always been addicted to idolatry and to magic: the Finlanders in this reſpect, ſurpaſſed all others; and we may ſay, that they were as well verſed in that diabolical art, as if they had had for their teachers, Zoroaſter or Circé. The ancients knew them to be ſo; and a Daniſh author, in ſpeaking of the Finlanders, from whom the Laplanders are deſcended, ſays, *Tunc Biarmenſes arma artibus permutantes, carminibus in nimbos ſolvere cœlum, lætamque aeris faciem triſti imbrium aſpergine confuderunt.* "The Biarmenſes, having re-"courſe to arts inſtead of arms, change, by means of their incantations, ſerene weather "into dreadful tempeſts, and cover the cheerful face of heaven with gloomy clouds." This writer informs us, that the Biarmenſes, who were the anceſtors of the preſent Finlanders, were as bad ſoldiers as they were good magicians. He ſpeaks of them in another paſſage in theſe terms. *Sunt Finni ultimi ſeptentrionis populi; vix quidem habitabilem orbis terrarum partem culturâ complent: acer iiſdem telorum eſt uſus; non alia gens promptiore jaculandi peritia fruitur, grandibus et latis ſagittis dimicant, incantationum ſtudiis incumbunt*, &c. "The Finlanders," ſays he, "are the people who "dwell fartheſt towards the north; they live in the moſt uninhabitable part of the "world, and make uſe of arrows ſo ſkilfully, that there is no other people ſo adroit "in drawing the bow; they fight with large and broad arrows, and give themſelves up "to the ſtudy of enchantments." If the Finlanders were ſo much addicted to magic formerly, their deſcendants, the Laplanders, are not leſs ſo, at the preſent day. They are only Chriſtians, from policy, and by conſtraint. Idolatry, which is much more palpable, and which affects the ſenſes more than the worſhip of the true God, cannot be rooted out of their affections. The errors of the Laplanders may be claſſed under two heads; thoſe which ariſe from their ſuperſtition and paganiſm, and thoſe which are owing to their enchantments and their magic. Their firſt ſuperſtition is generally to obſerve their unlucky days, during which they are unwilling to go to the chace, and believe that their bows would break on theſe days, which are the days of Saint Catharine, Saint Mark, and others. They will ſcarely venture out on Chriſtmas-day, which they believe to be unlucky. The origin of this ſuperſtition is that they have miſunderſtood what happened on this day, when the angels deſcended from heaven, and aſtoniſhed the ſhepherds; and they believe that on this day, evil ſpirits are abroad in the atmoſphere and might deſtroy them. They are alſo ſuperſtitious enough to believe that after death, there remains ſomething called *mânes*, of which they are much afraid, and when any one is killed in a diſpute with another, it is neceſſary for a third perſon, to go to the place where he is buried, that he may be enabled to pro-

mote a pacification between the perſon who is dead, and him who is alive. This is ſtrickly ſpeaking, the error of the ancient Pagans, who called Manes *quaſi qui maneant poſt obitum.* All this is only ſuperſtition; but you ſhall now ſee how much they have of impiety, paganiſm, and magic.

In the firſt place they mix Jeſus Chriſt indifferently with their falſe gods, and they make only one being of God and the devil, whom they believe they may worſhip in the manner moſt agreeably to their taſte. This mixture is particularly to be remarked on their tabors, where they place Storiunchar and his family above Jeſus Chriſt and his apoſtles. They have three principal gods; the firſt is called Thor, or the god of thunder; the ſecond Storiunchar; and the third *Parjutte*, which means the ſun.

Theſe three gods are worſhipped only by the Laplanders of Lula and Pitha; for thoſe of Kimiet and of Torno, among whom I have lived, know of one only, whom they call Seyta, and who is the ſame among them, as Storiunchar among the others. Theſe gods are made of a long ſtone, deſtitute of any other figure than that which nature has given it, and ſuch as they find it on the borders of the lakes. So that, every ſtone made in a peculiar manner, rough, or full of holes and concavities, is with them a god; and the more remarkable its ſtructure is, the greater is their veneration for it.

Thor is the chief of the gods, and he is, they believe, ruler of the thunder, and they arm him with a hammer. Storiunchar is the ſecond, whom they ſuppoſe to be vicar of the former, as if one ſhould ſay Thoriunchar, lieutenant of Thor. He preſides over all animals, and birds, as well as fiſh; and as it is him of whom they have moſt need, it is to him alſo that they chiefly make ſacrifices to render him propitious. They place him generally on the borders of lakes, and in the foreſts, over which he extends his juriſdiction, and diſplays his power. The third god whom they have in common with ſeveral other Pagans, is the ſun, for whom they have much veneration on account of the benefits which they receive from him. This is the one of all the three that they adore, whom in my opinion, they have the greateſt reaſon to worſhip. In the firſt place, he chaſes away, at his approach, that cold which has tormented them during more than nine months; he uncovers the earth, and affords nouriſhment to the rein-deer: he brings a day which laſts ſeveral months, and diſſipates the darkneſs in which they had ſo long been buried; on which account, they have, during his abſence, a great reſpect for the fire, which they believe to be a living repreſentation of the ſun, and which produces on earth the ſame effects, which the other does in the heavens.

Although each family has its own particular gods, the Laplanders nevertheleſs have public places, which belong to the community. I will talk to you afterwards of one of theſe places, which I viſited to ſee their altars; and it is there that they generally make their ſacrifices, in the following manner.

When the Laplanders have known, by the noiſe of the tabor that their god is deſirous of blood, and that he demands an offering, they conduct the victim, which is a male rein-deer, to the altar of the god, to whom they wiſh to ſacrifice, and they permit no wife or daughter, who are alſo forbidden to ſacrifice, to approach the altar. They ſlay the victim at the foot of the alter, in piercing his heart with a knife, plunged into his ſide; then approaching the altar with reverence, they take the fat of the animal, and the blood neareſt to the heart, with which they ſprinkle their god, with fear, in making croſſes to him with the ſame blood. They place behind the idol the horn of the feet; the bones, and the horns, they hang upon the one ſide, a red thread adorned with carded wool, and upon the other, thoſe parts, by means of which, the animal augments

its ſpecies. The ſacrificer carries away with him every part which can be eaten, and leaves only the horns to his god. But when it happens, that the altar of that god to whom they intend to ſacrifice, is ſituated on the ſummit of inacceſſible mountains, where they believe him to reſide, in that caſe, as they are unable to ſprinkle their god with the blood of the victim, they take a ſmall ſtone, which they ſteep in it, and throw it towards the ſpot which they are unable to reach.

They do not offer up ſacrifices to their gods only, but they alſo make them to the *mânes* of their parents or their friends, to prevent them from doing them any injury. The difference which takes place with reſpect to the ſacrifice to the mânes, is, that the thread, which is red in the other caſe, is black in this, and that they bury the remains of the animal, as the bones and the horns, and do not leave them uncovered, as they do upon the altars.

Thus much, Sir, have they in common with the Pagans: let us now conſider what they poſſeſs in particular with reſpect to their magical art. Although the Kings of Sweden have been able to do ſomething by their threatening edicts, and the puniſhment of ſome ſorcerers, yet they have found it impoſſible entirely to aboliſh the intercourſe of the Laplanders with the devil; they have only leſſened their number, and prevented the practiſers of the art from profeſſing it openly.

Among other enchantments which they are capable of producing, they ſay, that they can ſtop a veſſel in the middle of its courſe, and that the only remedy againſt the power of this charm, is the ſprinkling of female purgations, the odour of which is inſupportable to evil ſpirits. They can alſo change the face of the ſky, or cover it with clouds; and that which they perform with the greateſt facility, is, their ſale of the wind to thoſe who have need of it; and they have for this purpoſe a handkerchief which they tie in three different places, and which they give to him who has need of it. If he untie the firſt, he procures a gentle and agreeable wind, if he require a ſtronger he unties the ſecond, but if he looſen the third, he is certain to excite a dreadful tempeſt. They ſay, that this mode of ſelling the wind is very common in this country, and that the very loweſt ſorcerers have this power, provided, that the wind which is wanted, has already commenced, and requires only to be excited. As I have never ſeen any thing of all this, I ſhall give no opinion reſpecting it; but with reſpect to the tabor, I can tell you ſomething with a greater degree of certainty.

This inſtrument, with which they perform all their charms, and which they call *Kánnus*, is made of the trunk of a pine and a birch-tree, and the veins of which ought to proceed from eaſt to weſt. This *kannus* is made of a ſingle piece of wood, hollowed in its thickeſt part in an oval form, the under part of which is convex, in which they make two apertures long enough to ſuffer the fingers to paſs through, for the purpoſe of holding it more firmly. The upper part is covered with the ſkin of a rein-deer, on which they paint in red, a number of figures, and from whence ſeveral braſs rings are ſeen hanging, and ſome pieces of the bone of the rein-deer. They uſually paint the following figures; they draw firſt, towards the middle of the tabor, a tranſverſe line, above which they place the gods whom they hold in the greateſt veneration, as Thor, with his underlings, and Seyta, and they draw another line a little below the former, but which extends only half acroſs the tabor; there Jeſus Chriſt, with two or three apoſtles are to be ſeen: above theſe lines are repreſented the ſun, the moon, the ſtars, and the birds; but the ſituation of the ſun is under theſe very lines, on which they place the animals, the bears, and the ſerpents. They alſo ſometimes draw upon them the figures of lakes and rivers. Such, Sir, is the figure of a tabor; but they do not place upon every one the ſame thing, for there are ſome on which troops of rein-deer are drawn, for the purpoſe

purpoſe of knowing where they may be found, when any of them are loſt. There are ſome figures which tell the proper places for hunting, and others for fiſhing; ſome for diſcovering, whether the diſeaſes with which they are affected, will be mortal; and in this manner, of ſeveral other matters of which they are in doubt.

Two circumſtances are eſſential to the making uſe of this tabor; the index, for the purpoſe of marking the thing which they deſire, and the hammer to ſtrike the tabor, for the purpoſe of moving the index, till it ſtop at ſome figure. This index uſually conſiſts of a piece of braſs made in the form of ſtuds which are fixed in the bridles of horſes, from whence ſeveral other little rings of the ſame metal are pendant. The hammer is made out of one bone of the rein-deer, and is of the form of a large T. Some are made in a different form, but this is the moſt uſual. In ſuch veneration do they hold this inſtrument, that they keep it always wrapped up in the ſkin of a rein-deer, or in ſomething elſe: they never carry it into the houſe by the ſame door, through which the women paſs; but they introduce it, either through the cloth, which ſurrounds their hut, or by the aperture through which the ſmoke iſſues. They generally make uſe of the tabor, for three principal purpoſes: for hunting and fiſhing, for ſacrifices, and for knowing the tranſactions which are taking place, in the moſt diſtant countries: and when they wiſh to know ſomething on this ſubject, they take care, firſt, to bend the ſkin of the tabor, in taking it near to the fire; then a Laplander, falling on his knees, together with all thoſe who are preſent, he begins to ſtrike his tabor all round, and redoubling the ſtrokes with the words which he pronounces, as if he were poſſeſſed, his countenance becomes blue, his hair ſtands erect, and he, at length, falls motionleſs on his face. He remains in this ſtate, as long as he is poſſeſſed by the devil, and as it is neceſſary for his genius to bring him a ſign to prove that he has been at the place where he was ſent, then recovering his ſenſes, he tells that which the devil revealed to him, and ſhows the mark which has been brought to him.

The ſecond manner, which is leſs important, and leſs violent, is, how to diſcover the event of a diſeaſe, which they learn, by means of the fixture of the index, upon the fortunate or the unlucky figures.

The third, which is the leaſt conſiderable of all, ſhews them in what direction they ought to move, when they wiſh for a good chace; and when the index, agitated ſeveral times, ſtops at the eaſt or the weſt, the ſouth or the north, they infer from hence, that in following the quarter which is pointed out to them, they will not be unſucceſsful.

They have alſo a fourth uſe, to which they apply the index, viz. for the purpoſe of diſcovering whether their gods deſire ſacrifices, and of what kind they wiſh them to be. If the index ſtop at the figure which repreſents Thor or Seyta, they ſacrifice to him, and learn at the ſame time, what victim gives him the greateſt ſatisfaction.

Behold, Sir, the uſefulneſs of this wonderful Lapponian tabor, of which, we in France are totally ignorant. For my part, I who believe, with difficulty, reſpecting ſorcerers, I ſhall cheerfully oppoſe the general opinion of the whole world, as well as of many intelligent men, who have aſſured me, that nothing was more true, than the Laplanders could know diſtant events. John Tornæus, whom I have already mentioned, prieſt of the province of Torno, an extremely learned man, whoſe veracity I would readily believe, aſſerted, that this had happened to him ſo frequently, and that certain Laplanders had told him ſo often every thing that had occurred in his journey, even to the ſmalleſt particulars, that he had no difficulty in believing all that had been related concerning it. The archives of Bergen teſtify a fact, which happened to the ſervant of a merchant, who, wiſhing to know what his maſter was doing in Germany, went to viſit a very famous Laplander, and having written the information of the ſorcerer in the

archives of the city, the fact turned out to be as was related, the merchant having afterwards confeſſed, that, agreeably to the ſorcerer's information, he had, on ſuch a day, ſlept with a girl. As the Laplander had mentioned a thouſand other facts of this nature, which had been related to me in the country, by ſo many men worthy of credit, I confeſs to you, Sir, that I could not help believing them.

Whether theſe things which I have mentioned to you be true or falſe, this is certain, that the Laplanders have an implicit faith in the effects of the tabor, in which they are ſtregthened every day by the ſtrange ſucceſs which they obſerve to attend it. If they had no other inſtrument but this to exerciſe their diabolical art, it would do harm to none but themſelves; but they have beſides this, another method of inflicting danger, grief, diſeaſe, and even death itſelf, on thoſe whom they wiſh to injure. For this purpoſe, they employ a little ball of the ſize of a pigeon's egg, which they ſend forth to every part of the world, within a certain diſtance, according to the extent of their power; and when it happens, that this animated ball meets with any one on its road, whether man or beaſt, it goes no farther, but produces the ſame effect upon the perſon whom it has ſtruck, as it would have done on thoſe for whom it was intended. The Frenchman who was our interpreter during our journey in Lapland, and who had reſided thirty years at Swapavara, aſſured us, that he had ſeveral times ſeen theſe balls paſs cloſe by him. He told us, that it was impoſſible to know the form which they might aſſume, he could only aſſure us, that they flew with remarkable ſwiftneſs, and left behind them a little blue track, which it was eaſy to diſtinguiſh. He told us, alſo, that one day, while croſſing over a mountain, his dog, who cloſely followed him, was ſtruck by one of theſe *gants*, (for ſo theſe balls are called) in conſequence of which he expired on the ſpot, although he was in good health the moment before. He tried to diſcover the place where his dog had been wounded, and obſerved a hole under his throat, without being able to find in his body that which had ſtruck him. They preſerve theſe *gants* in leather bags, and, thoſe among them who are malicious ſcarcely ſuffer a day to paſs, without throwing ſome of theſe *gants*, and when they have no perſon whom they wiſh to injure, they throw them at random into the air, and when it happens, that a Laplander, engaged in this profeſſion, has any reſentment againſt another of the ſame fraternity, and wiſhes to injure him, his *gant* will have no power, ſhould the other be more expert than him at the buſineſs, and a greater devil. All the inhabitants of this country dread very much theſe emiſſaries, and thoſe who are known to have the power of throwing them, are highly reſpected, and no one dares to moleſt them. Such, Sir, is the whole information which I have been able to acquire, (reſpecting their magical arts,) by my own experience, as well as by the intelligence which I have received from all the people of the country, whom I believed extremely worthy of belief, and particularly from the prieſts, whom I have conſulted on all theſe ſubjects.

As ſoon as our Laplander became intoxicated with ſpirits, he wiſhed to counterfeit the ſorcerer; he took his tabor, and beginning to ſtrike it with the agitations and contorſions of a perſon poſſeſſed, we aſked him, whether our fathers and mothers were yet alive. It was very difficult to ſpeak with certainty on this ſubject; we were three in number; the father of one, and the mother of another were alive, while the third had neither father nor mother. Our ſorcerer told us all this: and extricated himſelf very well from the difficulty. Although thoſe with whom we were, conſiſted of Finlanders and Swedes, and could not have any knowledge of this matter which they might have communicated to the Laplander, yet as they had to do with thoſe who were not eaſily ſatisfied, and who wiſhed to have ſomething more palpable, and more preciſe than a

ſimple

ſimple effect of chance, we told him that we ſhould believe him to be a real ſorcerer, if he could ſend his demon to the lodging of any of us, and bring back a ſign to convince us that he had been there. I aſked him for the keys of my mother's cabinet, which I well knew he could only find upon her, or under her bolſter, and I promiſed him fifty ducats if he could bring them to me. As the journey was pretty long, it was neceſſary for him to take three or four good draughts of ſpirits, that he might travel the more gayly, and be enabled to employ the ſtrongeſt and the moſt powerful charms to call his familiar ſpirit, and to perſuade him to undertake the journey, and to return ſpeedily. Our ſorcerer uſed his utmoſt exertions; his eyes rolled round, his face changed colour, and his beard briſtled violently: he almoſt broke his tabor, ſo violently did he ſtrike it, and he fell at length upon his face as ſtiff as a rod. All the Laplanders who were preſent carefully hindered any perſon from approaching him while in this ſtate, and kept off even the flies, not ſuffering them even to remain upon him. I aſſure you that when I ſaw this ceremony, I believed that I was going to ſee fall in at the hole in the roof of the hut the keys which I had aſked for; and I waited till the charm would be finiſhed that I might make another requeſt, and beg of him to procure me a quarter of an hour's converſation with the devil, from which I expected to learn many things. I ſhould have known whether Miſs —— is ſtill a virgin, and the nature of the intercourſe betwixt Monſieur and Madame ———. I would have aſked him if Monſieur ——— had ——— his wife during three years that he has lived with her; whether the laſt child of Madame ——— is her huſband's or not: in fine, I ſhould have known a great number of things, which none but the devil knows.

Our Laplander remained as if he had been dead during a good quarter of an hour; when, beginning to recover a little, he began to look upon us, one after another, with haggard eyes; and after having examined us all very attentively, he addreſſed himſelf and told me that his ſpirit was not able to act agreeably to his inclination, becauſe I was a greater ſorcerer than he, and my genius was more powerful; and that if I would give orders to my devil to intermeddle nothing with his, he would give me ſatisfaction.

I confeſs to you, Sir, that I was exceedingly ſurpriſed at having been ſo long a ſorcerer, without being ſenſible of it. I did every thing in my power to put our Laplander on the road: I commanded my familiar demon to give no diſturbance to his; but after all theſe efforts we could gain no intelligence from our ſorcerer, who extricated himſelf very aukwardly from ſo difficult an affair, and who ſallied out in great wrath from the hut to go, I believe, to deſtroy all his gods and devils, who had deſerted him in the time of need, and we never ſaw him more.

On Thurſday morning we continued our journey to the lake of Tornotreſch; and at the place where it begins to form a river one can obſerve a little iſland on the left, which is ſurrounded on all ſides with dreadful cataracts, which deſcend with an awful precipitation among the rocks, where they excite a terrible noiſe. A famous altar, dedicated to Seyta, has been eſtabliſhed there ſince the earlieſt times, to which the Laplanders of the province of Torno reſort for the purpoſe of offering up ſacrifices on the moſt urgent occaſions. John Tornæus, of whom I have already ſpoken ſeveral times, mentioning this place, ſpeaks of it in the following manner: *Eo loco ubi Tornotreſch ex ſe effudit fluvium in inſulâ quâdam, in medio cataractæ Dara dictæ, reperiuntur Seytæ lapides, ſpecie humanâ collocati ordine. Primus altitudine viri proceri, poſt, quatuor alii paulò breviores, juxta collocati; omnes quaſi pileis quibuſdam in capitibus ſuis ornati: et quoniam res eſt difficillima periculoſque pleniſſima, propter vim cataractæ indictam navigium appellere, ideò Lapponi pridem deſierunt inviſere locum iſtum, ut nunc explorari nequeant, utrum quomodove ulli fuerint in iſtam inſulam.* "In the place," ſays he, "where the lake of

"Tornotreſch

" Tornotreſch begins to form a river, on a certain iſland in the middle of the cataract " called Dara, Seytan ſtones are found, placed in regular order, and bearing the human " form. The firſt is of the ſize of a tall man, and four others, ſomewhat leſs, placed at " its ſide: every one of them has on its head a kind of little hat; and becauſe it is very " difficult, and even dangerous, to approach this iſland in a boat, the Laplanders have " for a long time paſt ceaſed to viſit this altar; and they cannot underſtand how it has " been poſſible to adore theſe gods, and in what manner theſe ſtones have been conveyed " thither." We approached this altar, and perceived rather a large heap of rein-deer's horns, than the gods who were behind. The firſt was the thickeſt and the largeſt: it was not at all ſhaped in the human form, and I cannot well ſay what it reſembled; but this I can ſay, that it was very greaſy and very dirty, in conſequence of the blood and fat with which it was covered. This one was called Seyta: his wife, his children, and ſervant were ranged on his right ſide in regular order; but all theſe ſtones had no other ſhape than what they received from nature, when expoſed to a fall of water: they were as thick as the firſt, but much ſhorter. All theſe ſtones, and particularly that which repreſented Seyta, were placed upon branches of the birch-tree which had been lately cut; and there was to be ſeen on one ſide a maſs of carved pieces of wood, upon which ſome characters were engraved. We obſerved one in the middle which was much thicker and taller than the reſt; and this was, as our Laplanders informed us, the ſtaff which Seyta employs when on a journey. A little behind all theſe gods there were two others, thick, greaſy, and covered with blood, under whom there was, as well as the reſt, a number of branches: theſe were nearer the river than the others; and our Laplanders told us that theſe gods had been thrown ſeveral times into the water, and that they had always been found again in their places. Some time after I ſaw a circumſtance contradictory of the information of Tornæus. He ſays, in the firſt place, that this ſpot is no more frequented by Laplanders, in conſequence of the difficulty of approaching it; and it is on this account that it is held in ſuch great veneration by them, becauſe, according to them, the Seytan gods take delight in places difficult of acceſs, or even inacceſſible, as is evinced by the ſacrifices which they make at the bottom of the mountains where they imbue the ſtone with the blood of the victim, and throw it to thoſe places which they are unable to reach. But according to the aſſurances of our Laplanders, this place is at preſent as much frequented as formerly; and this we were induced to believe, by the green leaves which ſtill remained on the branches which ſupported theſe ſtones, and by the freſh blood with which they were ſtill ſprinkled. With reſpect to the hats which Tornæus mentions the gods had upon their heads, they conſiſt merely of a flat figure which is at the top of the ſtone, and juts out a little from it: but only the two firſt, which repreſent Seyta and his wife, have this appearance; the reſt being merely ſtones of a long ſhape, full of protuberances and holes, and ending in a point, they repreſent the children of Seyta and all the reſt of his houſehold. In fine, the altar is compoſed ſolely of a ſingle rock, which is covered with graſs and moſs like the reſt of the iſland, with this difference, that the blood ſpilt, and the quantity of wood and bones of the rein-deer, render the place more frequented.

Notwithſtanding all that our Laplanders could ſay to prevent us from carrying off theſe gods, we failed not to diminiſh the number of Seyta's family, and to take each of us one of his children; while they failed not to threaten us, and to call down imprecations on our head, by aſſuring us that our journey ſhould be unſucceſsful, if we excited the wrath of their gods. If Seyta had been thinner and leſs heavy, I ſhould have carried him off with his children; but having taken him in my hand, it was with great difficulty that I could move him from the ground. The Laplanders obſerving this, conſidered

ſidered me a man already doomed to deſtruction, who could not go many ſteps without being at leaſt thunder-ſtruck, for the moſt certain mark, in their opinion, of a god incenſed is the weight diſcovered in the idol; as, on the other hand, when the god is propitious, and ready to go where he is deſired, the idol can be lifted with great eaſe: it is by this means alſo that they learn whether he is deſirous of a ſacrifice.

We had no ſooner left this iſland than we entered the lake of Tornotreſch. From this lake the river Torno takes its riſe: it is in length about forty leagues from eaſt to weſt, but in breadth it is very inconſiderable: it is frozen from September to St. John's day, and furniſhes an almoſt inconceivable quantity of fiſh to the Laplanders. The tops of the mountains by which it is ſurrounded are ſo high that they conceal it; and the ſnows with which they are conſtantly covered prevent one almoſt from diſtinguiſhing them from the clouds. Theſe mountains are totally bare, and have no wood growing on them: there are nevertheleſs a number of beaſts and birds upon them, and chiefly *ſielripor*, which prefer theſe ſituations to any other. It is around this lake that the Laplanders ſpread themſelves when they return from Norway, whence they have been baniſhed for a ſeaſon by the heat and the gnats; and it is here and in the neighbourhood where the greater number of them depoſit their riches: they have no other ſtrong box to hold their money and their moſt valuable articles. They take a pot of copper and fill it with their moſt precious goods, after which they carry it to the moſt ſecret and retired ſpot which they can think of; there they bury it in a deep hole dug for the purpoſe, and cover the place with graſs and moſs, to prevent any one from diſcovering it. All this is done by the Laplander without giving any information reſpecting it to his wife or children; and it often happens that the children loſe a treaſure in conſequence of its being too well hid, when the father happens to die an unexpected death, which prevents him from diſcovering where his riches are concealed. All the Laplanders hide likewiſe their property, and quantities of rix-dollars, and veſſels of ſilver, rings, and other trinkets, and ornaments, which have no other owner but him who finds them, and who does not give himſelf very much trouble in ſeeking after the true owner, are often diſcovered. We advanced pleaſantly about ſeven or eight leagues upon the lake, near to a mountain which ſurpaſſed all the reſt in height: it was here that we ended our journey, and erected our memorial. We were fully four hours in aſcending to the top, by a path which had never before been trod by a human being: when we had at length arrived at the ſummit, we ſaw the whole extent of Lapland, and the northern ocean as far as the North Cape on the weſtern ſide. It was here that we planted the following inſcription, which was its proper place, but which will never be read, I believe, except by the bears:

"Gallia nos genuit; vidit nos Africa; Gangem
Hauſimus, Europamque oculis luſtravimus omnem:
Caſibus et variis acti terraque marique,
Hic tandem ſtetimus, nobis ubi defuit orbis.

De Fercourt, De Corberon, Regnard.
Anno 1681, die 22 Auguſti."*

This rock will be at preſent known in the world by the name of Metavara, which we gave it. This word is compounded of the Latin word *meta*, and another Finland word *vara*, which means *rock*; as if we had ſaid, the rock of boundary. In fact, Sir, it was here that we ſtopt, and I do not believe that we will ever go farther.

While we were mounting and deſcending from this mountain, our Laplanders went

* For the tranſlation, ſee page 175.

to find out the habitations of their comrades: they did not return till an hour after midnight; and they told us that after having travelled a great way they had not been able to find any body. This intelligence vexed, but did not depreſs us, for we had only come this length for the purpoſe of ſeeing the moſt diſtant ſpots, and we had left a number of objects behind us, which we had deferred viſiting till our return. We had been deſirous of employing our firſt ardor in viſiting the moſt difficult objects, leſt this fire of curioſity being leſſened, we ſhould have been contented with obſerving the neareſt objects.

We reſolved therefore now to retrace our ſteps; and the wind being weſterly, we ſet ſail early in the morning, and returned in one day to find that little old Laplander whom I have already ſpoken of, and who promiſed to entertain us on our return: we met him on the river fiſhing, and we induced him, by our preſents of tobacco and ſpirits, to take us to his hut, although he endeavoured to avoid it, and ſeemed to forget the promiſe which he had made us. He informed one of our Lapland conductors, who was his ſon-in-law, of the place of his reſidence; and having ſet out through the woods with one of our interpreters, whom we expreſsly prohibited from quitting him, we continued our route by water. Having arrived in two hours oppoſite to the place where the hut was ſituated, we went aſhore, and finding that it was ſtill at a conſiderable diſtance, we took with us a quantity of tobacco and a bottle of ſpirits, and followed our Laplander, who conducted us during the whole night through the wood. This man, who was not intimately acquainted with his father's reſidence, which had been lately changed, was as much embarraſſed as ourſelves: ſometimes he put his ear to the earth, in order to hear ſome noiſe; ſometimes he examined the footſteps of the animals which we met with, in order to diſcover whether the rein-deer which had paſſed were ſavage or tame; ſometimes he climbed like a cat to the tops of pine-trees, to diſcover the ſmoke, and always roared with his whole force, with a dreadful voice, which reſounded through all the wood. At length, after having wandered a long time, we heard a dog bark; never did a voice appear to us ſo charming as that of this dog, which came to conſole us in the deſert. We turned to that ſide from whence the noiſe proceeded; and after having ſtill travelled ſome time, we fell in with a large troop of rein-deer, and a ſhort time afterwards we arrived at the hut of our Laplander, who had only juſt arrived, like ourſelves.

This hut was in the middle of the wood, conſtructed like all the reſt, and covered with its *valdmar*: it was ſurrounded with moſs, for the purpoſe of feeding about eighty rein-deer which the Laplander poſſeſſed. Theſe rein-deer form the whole wealth of this people: there are even ſome who have a thouſand and twelve hundred. It is the employment of the women to take care of them, and they tie and milk them at certain hours: they count them twice every day; and when one ſtrays, the Laplander ſearches for it in the woods till he finds it. They ſometimes run a very long time after theſe animals, and follow their tracks in the ſnow for three whole weeks. The women, as I have already ſaid, have a particular care over the rein-deer and their young; they watch them conſtantly, and guard them day and night againſt the wolves and other ſavage beaſts. The beſt method of guarding them againſt the wolves is that of tying them to ſome tree; and the wolf, who is very ſuſpicious and fearful of being taken, is afraid that this is only a feint, and that there is near the animal ſome ſnare in which he may be caught. The wolves are in this country extremely ſtrong, and quite grey; they are almoſt quite white during the winter, and are the moſt deadly enemies of the rein-deer, who defend themſelves againſt them with the fore-feet, when they cannot eſcape by flight. There is alſo an animal of a greyiſh brown colour, about the height of a dog, which the Swedes call *jært*, and the Latins *gulo*, which alſo carries on a bloody warfare with

with the rein-deer. This beaſt will aſcend to the tops of the higheſt trees, for the purpoſe of ſeeing and ſurpriſing its enemy, while it remains concealed. When the *jært* diſcovers a rein-deer, whether tame or wild, paſſing under the tree on which he is ſeated, he throws himſelf on its back, and placing his hind-feet on its neck, and his fore-feet towards its tail, he ſtretches out and ſtiffens himſelf with ſuch violence, that he ſlits open the rein-deer's back, and inſerting his ſnout, which is extremely ſharp, into the animal, he in this manner drinks its blood. The ſkin of the *jært* is very handſome and very beautiful; it is even compared to that of the ſable.

There are alſo ſome birds which carry on a deſtructive warfare with the rein-deer; and among the reſt the eagle is extremely fond of the fleſh of this animal. In this country great numbers of eagles are to be found, of ſuch an aſtoniſhing ſize, that they often ſeize upon with their claws the young rein-deer of three or four months old, and lift them up in this manner to their neſts, at the tops of the higheſt trees. This particular immediately appeared to me, what I ſuppoſe it will alſo do to you, very doubtful; but ſo true is it, that the guard employed to watch the young rein-deer is only uſed for this very purpoſe. All the Laplanders have given me the ſame information; and the Frenchman who was our interpreter aſſured me that he had ſeen many examples of it; and that having one day followed an eagle which carried a young rein-deer from its mother's ſide to its own neſt, he cut the tree at the foot, and found that the half of the animal had already been eaten by the young ones. He ſeized the young eagles, and made the ſame uſe of them which they had made of his young deer, namely, he ate them. Their fleſh is pretty good, but black, and ſomewhat inſipid.

The rein-deer remain pregnant nine months. When the Laplanders wiſh to wean the young ones, they put upon their heads a circle of pine, the branches of which are made ſharp, and prick very much, ſo that when the young one approaches its mother, in order to take its uſual nouriſhment, ſhe, finding herſelf pricked, puſhes away the young one with her horns, and obliges it to ſeek for nouriſhment elſewhere. This is not the only employment of the women: they make the clothes, the ſhoes, and the boots of the Laplanders; they draw the carded wool to cover thread; this they do with their teeth, while they hold the bone of a rein-deer, through which there have been ſeveral holes made of various ſizes, and they firſt paſs their wool through the largeſt, then through the next, and ſo on, till it be brought to the ſtate they deſire, and fit to cover the thread of the rein-deer with which they ornament their dreſs and every thing they make. This thread, as I have already mentioned, is compoſed of ſinews extricated from the rein-deer, which they draw by fibres, and entwine them afterwards on the cheek, while they continue conſtantly to twiſt them, and from time to time to moiſten them: this is the only method they make uſe of to make thread. All the harneſs of the rein-deer is likewiſe made by the women: this harneſs is compoſed of the ſkin of the deer; the breaſt-leather is ornamented with a number of figures, made of woollen thread, from which ſeveral little bits of ſerge of all colours hang, which form a kind of fringe: the little bell is in the middle; and there is nothing which gives vigour to this animal, or which gladdens it more, than the noiſe which it makes with this bell whilſt travelling.

As I have begun with ſpeaking to you of the occupations of the females of this country, I am naturally led to talk of the employments of the men. I ſhall now ſtate, in general, that all the inhabitants of this country are naturally ſluggiſh and lazy, and that nothing but hunger and neceſſity can chace them from their huts and oblige them to labour. I ſhould have concluded that this general vice aroſe from the climate, which is ſo cold that no one can eaſily expoſe himſelf to the air, had I not found that they are equally lazy in ſummer as in winter; but, in fact, as they are almoſt conſtantly neceſ-

ſitated to uſe exertions for their ſubſiſtence, they are nearly always engaged in hunting and fiſhing: they hunt during winter, and fiſh during the ſummer; and make with their own hands all the inſtruments neceſſary for each of theſe employments. Their boats are made of fir, and are joined together by the thread of the rein-deer, which makes them ſo light that one perſon can eaſily carry one of them upon his ſhoulder. They require a quantity of theſe boats, in conſequence of the number of cataracts which they frequently meet with; and as they are unable to aſcend theſe, they have in many places a boat on each ſide of them: they leave them on the bank of the river, after having drawn them to land, and put two or three ſtones into them, to prevent the wind from carrying them away. Some employ thread and cord to faſten them; the thread is made of hemp, which they purchaſe from the merchants: they often rub it with a kind of red glue, which they make of the ſcales of fiſh dried in the air, for the purpoſe of ſtrengthening and rendering them leſs diſpoſed to putrefaction. They make their cords of the bark of the birch-tree, or the root of the fir; they are extremely ſtrong when immerſed in water. The men are continually employed in making ſledges of all kinds: ſome of them for the purpoſe of conveying their perſons, which are called *pomes*; and others for carrying the baggage, which are called *racdakeres*, and are ſhut like coffers: they alſo make their bows and arrows. The bows are compoſed of two pieces of wood placed one above the other; the lower one conſiſts of burnt fir, and the other of birch: theſe pieces are glewed together, and covered throughout their whole length with a very thin piece of bark of the birch-tree, which prevents one from perceiving that which it contains. Their arrows are of various kinds: ſome are compoſed ſolely of wood, and are employed to kill, or rather to ſtun, the minevers, the ermines, and the martins, and other animals, whoſe ſkins they are deſirous of preſerving; there are others covered with the bone of the rein-deer, made in the ſhape of a harpoon, and long-pointed; this arrow is thick and heavy: the latter is employed againſt birds, and never comes out of the wound when it has once entered the body; it alſo by its weight prevents the bird from flying, and carrying away with it the arrow and the hopes of the huntſman. A third kind is covered with iron, in the form of a lancet, and is employed againſt the large animals, ſuch as the bears and the wild rein-deer; and every arrow of this ſort is placed in a little quiver, made of the bark of the birch-tree, which the huntſman carries in his girdle. In fact, the Laplanders are extremely expert at the uſe of the bow, and they oblige their children to engage in thoſe practices, which ſeveral warlike nations in former times wiſhed that they had done; for they give them nothing to eat till they have previouſly hit an object prepared for them, or have knocked down ſome mark which has been placed for the purpoſe on the top of ſome high pine.

All the houſehold utenſils are made by the men: their ſpoons are cut out from the bones of the rein-deer, and they adorn them with figures, in which they put a certain black compoſition. They make lids to their ſacks alſo from the bone of the deer, and little baſkets of bark and ruſhes, and likewiſe thoſe planks which they employ in running upon the ſnow, and with which they purſue and catch the ſwifteſt animals. The deſcription of theſe planks has been formerly given.

But that which is truly remarkable is, that the men always perform the buſineſs of the kitchen, and that they prepare all the food they procure, whether in hunting or fiſhing; the women never intermeddle with this part of their duty, except during the abſence of their huſbands.

We obſerved this immediately on our arrival, and the Laplander dreſſed ſome freſh *fiehs* which he had taken that day. This fiſh is ſomewhat larger than a herring, but incomparably better; and indeed I never taſted fiſh more delicious than this. As ſoon as

as it was dreſſed they prepared the table, made of pieces of the bark of the birch-tree ſewed together, and ſpread it upon the ground. The whole family placed themſelves around it, with their legs croſſed in the manner of the Turks, and every one took his ſhare from the pot, which he placed either in his cap, or in a corner of his dreſs. Their drink is placed in a large wooden diſh at their ſide, if in ſummer, and in winter it is in a pot on the fire. Every one takes according to his inclination his ſhare of the food, by means of a large wooden ſpoon, and drinks in the ſame manner according to his thirſt. When the meal is finiſhed, they ſtrike their hands in token of friendſhip. The moſt ordinary food of the poor conſiſts of fiſh; and they throw ſome bruiſed bark of the pine in the water, which ſerves to dreſs them in the ſame manner as boiled meat. The richer individuals eat the fleſh of the rein-deer which they have killed at Michaelmas, when they are fat. They ſuffer no part of this animal to be loſt: they even preſerve the blood of it in its bladder; and when it has thickened and become hard, they cut it and place it in the water which remains from the dreſſing of the fiſh. The marrow of the bones of the deer is conſidered with them a delicious morſel; the tongue is no leſs ſo; and the limb of a male rein-deer is one of their greateſt delicacies. But although the fleſh of the rein-deer be much eſteemed among them, that of the bear is incomparably more ſo: they make preſents of it to their miſtreſſes, which they accompany with that of the caſtor. They have during the ſummer a ragout, which I taſted, and which I thought would have killed me. They make uſe of certain little black fruit which grows in the woods, about the ſize of a gooſeberry, which they call *crokberst*, and which means *raven's gooſeberry*. They put theſe along with the ſpawns of fiſh in a diſh, and mix the whole together, to the great torment of the ſtomachs of all thoſe who ſee them, and who are not accuſtomed to ſuch kinds of *ragouts*, which however are conſidered by them as the moſt exquiſite luxuries. When the meal is finiſhed, the richer individuals take, by way of deſert, a ſmall piece of tobacco, which they draw from behind their ear; this is the place where they dry it, and they have no other box in which to preſerve it: they then chew it, and when they have drawn all the juice from it, they place it again behind the ear, where it acquires a new taſte; they ſtill chew it once more, and replace it again in the ſame manner, and when it has loſt all its ſtrength they ſmoke it. It is aſtoniſhing to ſee with what facility theſe people live without bread, and how anxious they are at the ſame time about a paltry herb which grows at ſuch a diſtance from them.

We interrogated our Laplander upon many ſubjects. We aſked him what he had given his wife at their marriage: he told us that ſhe had been very expenſive to him during his courtſhip, having coſt him two pounds weight of tobacco, and four or five pints of brandy; that he had made a preſent of the ſkin of a rein-deer to his father-in-law; and that his wife had brought with her five or ſix rein-deer, who had multiplied exceedingly during the forty years in which they had been married. Our converſation was enlivened with brandy, which we poured from time to time, by means of our entreaties, down the throats of this good man and his wife; and the return of this pleaſing practice became ſo frequent, that both began to feel the effects of it. They now careſſed each other, in the Lapland manner, as ardently as you can well imagine; and their tenderneſs went ſo far that they began both of them to weep, as if they had loſt all their rein-deer. The night paſſed away in the midſt of theſe mutual endearments; and we obſerved on this occaſion, what I believe I have already told you, that the whole family ſleeps on the ſame ſkin. This confuſion is always prevalent among the Laplanders; and a huſband not only lies with his wife on the firſt night of his marriage, but with all the family together.

Next morning we each of us cauſed a deer to be killed, which coſt us two crowns,

in order to have its ſkin to carry to France. If I had returned by a direct road, I ſhould have endeavoured to carry ſome live rein-deer along with me. Several individuals have in vain endeavoured to do ſo; and laſt year three or four were conducted to Dantzic, where they died, not being able to live in ſuch a climate, it being too hot for them. We delayed killing them till we ſhould viſit the prieſt, when we could do it more conveniently; and after having taken two or three of theſe little collars which are employed to guide theſe animals, and ſome others, for the purpoſe of ſecuring them, we ſet out on our return, and made our rein-deer paſs the river: we arrived the ſame day, Saturday, at the reſidence of the prieſt of the Laplanders, where we had ſtopt in paſſing.

No ſooner had we arrived than we were anxious to kill our animals. The Laplanders for this purpoſe employ a bow, and an arrow of the ſame kind, with that which they make uſe of in killing large beaſts. We had the pleaſure of perceiving the addreſs with which they prepared their ſtroke, and we were aſtoniſhed that a beaſt ſo large as a rein-deer ſhould die ſo quickly of ſo very inconſiderable a wound. It is true, the arrow pierced as far as the half of its ſhaft; but I ſhould have believed that a more dangerous wound would have been neceſſary to kill it ſo ſoon.

——Hæret latere lethalis arundo.

We had our animals ſkinned in the beſt way we were able: the Laplanders took poſſeſſion of the blood, and we gave them the half of one. It is difficult to conceive how two men alone could eat the half of a large deer, without bread, without ſalt, and without drink: it is however very true; and we ſaw it, in this inſtance, take place in our Laplanders with great aſtoniſhment.

We obſerved that the rein-deer have no gall, but only a little black ſpot on the liver. The fleſh of this animal is very good, and has a conſiderable reſemblance in taſte to that of the ſtag, but it is ſtronger; the tongue is a delicious morſel, and the Laplanders are fond of the marrow. At Saint Michael's day it becomes fat as a pig; and it is at that time that the rich Laplanders kill it, for the purpoſe of furniſhing themſelves with proviſions during the reſt of the year. They make the cold dry the fleſh, which produces the ſame effect as when it is dried by fire, and which dries it up, ſo that it can be eaſily preſerved. Their ſalting-tub conſiſts of the trunk of a tree hollowed out by the hands of nature, which they cover in the beſt manner they are able, to prevent the bears from ſtealing it.

We remained ſome days with the prieſt, waiting for a Laplander who was conſidered a great ſorcerer, and whom we had ſent our Laplanders to bring from a diſtance of ſeveral leagues. They returned at the end of ſome days, and made ſuch exertions, in order to procure the money which we had promiſed them if they brought him, that in three days we ſaw them return with the ſorcerer, whom they had diſcovered in the heart of a wood. We were now as happy as if we had held the devil by the tail, if I may uſe the expreſſion; and what gave us pleaſure was the promiſe that our enchanter made us of telling us many things which would ſurpriſe us. We now ſet out, therefore, on our journey through woods, over rocks, and through marſhes. Where will not one go to ſee the devil in this world? We travelled more than five leagues, during which we met with a number of birds and beaſts, with the names of which we were unacquainted, and particularly of minevers. Theſe minevers are what we call in France ſquirrels, which change their red colour when the winter and the ſnows make them turn grey: the farther north they are, they become the more grey. The Laplanders carry on a conſtant war with them during winter; and ſo well trained are their dogs to this chace, that

that they never paſſed any without obſerving them even upon the higheſt trees, and informing, by their barking, the Laplanders, who were with us. We killed ſome with our fire-arms; for the Laplanders had not on this occaſion, their round arrows with which they knocked them on the head; and we had the pleaſure of ſeeing them ſkin them with ſurpriſing quickneſs and propriety. They begin to hunt the minevers on Michaelmas day, and every Laplander is uſually engaged in this employment, by which means, they have a great market for them, and they ſell a *timbre* for a crown; this timbre conſiſts of forty ſkins. But there is no kind of merchandize in which there is more deceit than in that of ſelling minevers, and ermines' ſkins, as they are bought without being ſeen and the ſkin is turned, ſo that the fur is on the inſide. There is alſo no diſtinction made; all are at the ſame price, and it is neceſſary to take the good with the bad, which coſt no more, the one, than the other. We learned from our Laplanders, a ſurpriſing peculiarity reſpecting the minevers, which was afterwards confirmed to us, by our own experience. Theſe animals are not always to be found in the ſame number; they frequently change their country; and they will not be able to find one during a whole winter, where the year before thouſands were to be met with. Theſe animals change their place of reſidence. When they wiſh to remove to ſome other ſpot, and find it neceſſary to paſs ſome lake or ſome river, which they meet with at every ſtep in Lapland, theſe little animals take the bark of a pine or birch-tree, which they draw to the edge of the water, upon which they place themſelves, and, in this manner, abandoning themſelves to the mercy of the wind, they lift their tails in the form of ſails, and, in this manner, when the wind becomes a little ſtrong, and the water grows rough, the veſſel and the pilot are in the ſame inſtant overwhelmed. This ſhipwreck, which frequently amounts to more than three or four thouſand ſail, generally enriches thoſe Laplanders, who find thoſe wrecks upon the bank, and employ them to their ordinary uſe, provided theſe little animals have not remained too long on the ſand. There are many who make a proſperous voyage, and who arrive ſafely in port, provided the wind has been favourable, and has excited no ſtorm upon the water, which indeed would not require to be very violent, for the purpoſe of ſwallowing up theſe little ſtructures. This particularity might paſs for a fable, had I not been convinced of it from my own experience.

After having travelled a long time, we arrived at the hut of our Laplander, which was ſurrounded by a number of others belonging to his comrades. Here it was, that we learned the nature and condition of the Laplanders and Lapland. We reſided three days among them for the purpoſe of obſerving all their manners, and of being informed reſpecting a number of particulars, which we could only learn from themſelves. Firſt, our ſorcerer intended to fulfil his promiſe, we began to entertain ſome expectation of learning ſome of thoſe things which we wiſhed to know, when we obſerved, that he had brought with him his tabor, his hammer, and his index, which he drew from his breaſt, which ſerved him inſtead of a pocket. He put himſelf in a condition, to call the devil by his conjurations. Never did a perſon poſſeſſed place himſelf in ſo many different poſtures, as our magician. He ſtruck his breaſt ſo rudely and ſo unmercifully, that the black wounds with which it was covered, ſhowed clearly that he was really in earneſt. To theſe blows, he added others, which were no leſs harſh, and which he gave himſelf with his hammer upon the face, ſo that the blood flowed from every part. His hair ſtood erect, his eyes turned, his whole countenance became blue, he ſuffered himſelf to fall ſeveral times in the fire, yet he was never able to tell thoſe things which we demanded. It is true, that even a perfect ſorcerer would have found it difficult enough to give the ſatisfactory evidences which we inquired after. I wiſhed

to

to have ſome certain proof from France, in proof of the miſſion of his demon; and this was the ſtumbling-block, of all the ſorcerers, whom we had yet conſulted. This perſon who was conſidered very expert at his profeſſion, aſſured us, that he had formerly been able to do what we deſired; but that his genius had never been farther than Stockholm, and that there were very few who could go farther; and that the devil began to leave him as he grew old, and loſt his teeth. This peculiarity aſtoniſhed me, I inquired reſpecting it more particularly, and I underſtood, that it was very true, and that the power of the moſt intelligent ſorcerers decreaſed as they loſt their teeth; and I concluded, that, in order to be a good ſorcerer, it was neceſſary to hold the devil by the teeth, and that he could only be well faſtened in this manner. This man obſerving, that we drove him, by means of our queſtions, to extremities, promiſed that, with the aid of ſpiritous liquors, he would tell us ſomething ſurpriſing. He took, and looked upon it ſeveral times, after having made a number of invocations, and grimaces; but he only told us very ordinary things, which one could very eaſily underſtand, without being a great ſorcerer. All theſe circumſtances led me to draw a concluſion which was a very juſt one, that all theſe people are more ſuperſtitious than ſorcerers; that they eaſily believe the fables which are related to them reſpecting their anceſtors, who, it is aſſerted, had a great intercourſe with the devil. It may be true, Sir, that there were in reality, ſome ſorcerers among them in former times, when the Laplanders were buried in the errors of paganiſm; but, at preſent, I believe it would be extremely difficult to find one, who well underſtood his profeſſion. When we ſaw that we could procure no information from our Laplander, we amuſed ourſelves with making him drunk; and this deprivation of reaſon, which continued three or four days, gave us an opportunity of ſtealing from him all his magical inſtruments: we took his tabor, his hammer, and his index, which was compoſed of a number of rings, and ſeveral pieces of braſs, which repreſented ſeveral infernal figures, or ſome characters tied together by a chain of the ſame metal: and when, two or three days after, we were on the point of ſetting out, he came to us to demand all his articles, and inquired particularly at every one, if he had not ſeen them. The anſwer we gave him was, that he could eaſily know, and that if he was a ſorcerer, he would find no difficulty in diſcovering who had them.

We left theſe people, in order to viſit others, that we might ſee and learn ſomething further of their manners. We entered firſt into a hut, where we found three or four women, one of whom was completely naked, and was giving ſuck to a little child which was alſo in the ſame condition. The cradle was at the end of the hut, hanging in the air; it was made out of a hollow tree, and full of a fine moſs, which ſupplied the place of linen, mattraſs, and coverlid; two ſmall circular pieces of oſier covered the upper part of the cradle, over which was placed a wretched piece of cloth. This naked woman, after having waſhed her child in a pot filled with hot water placed it again in the cradle; and the dog, who was inſtructed how to rock the child, placed his two fore-feet upon the cradle, and gave it the ſame motion which a woman does. The dreſs of the woman differs very little from that of the male ſex; it is of the ſame *valdmar*, and the ſaſh is larger; it is adorned with pieces of tin, which cover its whole breadth, and differs from that of the men in this reſpect, that the latter is only marked with pieces of the ſame metal, placed one after the other. At this ſaſh, a ſheath filled with a knife, hangs; the ſheath is adorned with filaments of pewter; there is alſo a purſe adorned in the ſame manner, in which they place a ſteel to ſtrike fire with, and all their moſt precious articles; this is alſo the place where they hang their needles attached to a piece of leather, and covered with a piece of braſs, which

they

they puſh over it. All theſe articles are adorned on the lower ſide alſo with a number of braſs rings of various ſizes, the noiſe and ſound of which amuſe them extremely; and they believe that theſe ornaments tend eſſentially to ſet off their natural beauty. But perhaps, Sir, whilſt I am ſpeaking of beauty, you will have the curioſity to inquire whether there are any handſome Laplanders. To this queſtion, I will anſwer, that nature, which has been pleaſed to create mines of ſilver and other metals in the northern regions, the moſt diſtant from the ſun, ſports herſelf ſometimes with forming beauties which are ſupportable in theſe very countries. It is always however true, that thoſe individuals who ſurpaſs the reſt by their beauty, are ſtill but Lapponian beauties, and could only be conſidered ſuch in this country. But, generally ſpeaking, it is certain, that all the Laplanders, male and female, are horribly ugly; and very much reſemble monkeys: I do not know a compariſon by which they can be more properly deſignated. Their face is ſquare; their cheeks are much elevated; the reſt of their countenance is narrow; and the mouth extends from ear to ear. Such, in a few words, is a deſcription of all the Laplanders.

Their dreſs as I have already mentioned, conſiſts of the *valdmar*. The cap of the man is generally made of the ſkin of the *loom*, as I have already deſcribed, or even of ſome other bird, which has been flayed. The head-dreſs of the women is compoſed of a piece of cloth; and the richeſt among them cover their heads with a ſkin of a fox, martin, or ſome other beaſt. They do not make uſe of a ſtocking, but compoſed of ſolely, during the winter, a pair of boots of the leather of the rein-deer, or of a fox, a them ſhoes like thoſe of the men, that is a piece of leather without ſeam, but they have and which is elevated on the fore-part: a hole is left for the rein-deer, and put over in, and they tie them above the ancle with a long wollen which ſurrounds the foot, or ſix times; and that theſe coverings for their feet the purpoſe of putting the foot eaſineſs, and allow woollen cord, which goes round five have boiled for that their legs and feet may give them no un- Their gloves are made walk with eaſe, they fill their ſhoes with hay, which they partments with and which grows in abundance throughout all Lapland. glove. They are made ſkin of the rein-deer, which they divide into ſeveral com- on the lower ſide, of leather which is whiter, ſewed and fixed upon the peculiar to them, mittens, without any fingers, and the handſomeſt are lined other colour, which kin of the *loom*. The women have an ornament, which is the ſtomach, where they call *kraca*, made of a piece of red cloth, or ſome valuable articles; the neck, like the collar of a Jeſuit, and deſcends upon which fronts the in a point. This cloth is ornamented with their moſt buttons and plates covered with various plates of pewter, but that part tent themſelves with ned with their rareſt commodities. The rich place here to their abilities. moſt beautiful that they can procure, and the poor con- the ſame place, pieces of pewter and copper, according

We alſo made theſe people reſpecting all thoſe matters which we had been informed of nd they confirmed the truth of them in every point; and what particulars they gave us, I have given in the place where I ſpoke on that ſubject. to gain ſome knowledge of all the quadrupeds that are to be found in this they related to us the following particulars.

They aſſured us ce, that in this country, they were frequently expoſed to winds ſo impetuous carried away every object that they encountered. The ſtrongeſt houſes withſtand them; and they carry to ſuch a diſtance, even whole troops they are on the ſummits of the mountains, that it frequently is unknown come of them. The hurricanes bring with them ſuch

a quantity of ſand in ſummer from the coaſts of Norway, tha[illegible] they leſſen the view to ſuch a degree, as to render it impoſſible to ſee two ſteps diſtan[illegible]; and in winter, they drive ſuch a quantity of ſnow, that they bury the huts, and whol[illegible] flocks. When the Laplanders are ſuddenly ſurpriſed on the road with one of theſe [illegible]torms, they have no means of defence, than that of over-turning their ſledge over t[illegible]em, and remaining in this poſture, as long as the ſtorm continues; others retire into t[illegible]e cavities of mountains with all that they can take along with them, and remain in theſe [illegible]aves, till the tempeſt, which continues ſometimes eight or fifteen days, ſhall have wholly [illegible]ſubſided.

Of all the animals of Lapland, there are none ſo common as the[illegible] rein-deer, whom I have already ſo particularly deſcribed. Nature, like a kind mothe[illegible], has provided her countries, cold as thoſe of the north, in giving them a number of [illegible]animals, fit for providing them with furs, which defend them againſt the exceſſive rigo[illegible]urs of winter, and which laſt for ages. Among thoſe whoſe ſkins are moſt eſteemed [illegible]for their warmth, thoſe of the bear and the wolf hold the firſt rank. The former anim[illegible]al is very common in the north; the Laplanders call him king of the foreſt. Alt[illegible]hough the bear is generally of a red colour, yet ſome are nevertheleſs obſerved to be [illegible]white; and there is no animal againſt which the Laplander wages ſuch a cruel warfare[illegible], as this, in order [illegible]may procure his ſkin and his fleſh, which he reckons the n[illegible]oſt delicate of all [illegible]ve ſometimes eaten of it, but it appeared to my taſte [illegible]extremely inſipid. that he [illegible]ar is the moſt ſolemn action of the Laplander; [illegible]nothing is more food. I ha[illegible]ople than to kill a bear, and they carry eviden[illegible]ces of their having The chaſe of the be[illegible] ſo that, it is eaſy to ſee how many bears [illegible]a Laplander has glorious among this pe[illegible]which he carries in various places of his [illegible]bonnet. He who done ſo about with them[illegible]ear, goes to inform his companions; [illegible]and he whom they killed, by the hair of them, has made the diſcovery of ſome be[illegible]upon the tabor to learn whet[illegible]her the chace will believe to be the greateſt ſorcerer plays [illegible]hen this ceremony be proſperous, and on what ſide, the animal ought to be attac[illegible]nes firſt, and leads is over, they march againſt the animal; he who knows the f[illegible]im in the ſpeedieſt the reſt, until they arrive at the den of the bear. There, they [illegible]kill him. Whilſt manner they can; and with arrows, lances, ſticks, and fire[illegible] *belis pourra, Kibelit* they are attacking the animal, they all ſing a ſong in theſe [illegible] *iiſcada ſoubi jælla jeitti.* They beg earneſtly of the bear tha[illegible] them no miſchief, and that he will not break the lances and other arms whic[illegible]oy to deſtroy him. When they have killed him, they put the body into a ſled[illegible]t to the hut: and the rein-deer who has been employed to remove it, is ex[illegible]ng the whole year from labour in this ſledge; and means are alſo taken to [illegible]from approaching any female. They conſtruct a hut for the expreſs purp[illegible]g the bear, which is employed in no other manner, and in which the hun[illegible]with their wives, and begin again their ſongs of joy and of thanks to th[illegible]t they have been allowed to return in ſafety. After the meat has been di[illegible]vided between the men and the women. The latter are unable to eat an[illegible] parts, but always partake of the fore part. The whole day is paſſed in rej[illegible] deſerves to be remarked, that all thoſe who have aſſiſted in taking the be[illegible]proach their wives for three days, at the end of which, they muſt bathe th[illegible]der to be purified. I had forgotten to obſerve, that when they have arr[illegible] bear near to the hut, they do not carry it in at the door, but cut[illegible]and throw them in at the hole through which the ſmoke iſſues, in c[illegible]y appear, to have been ſent and deſcended from heaven. They do t[illegible] they return from the chace of other animals. There is nothing n[illegible]n the opinion of a Laplander, than to aſſiſt at the death of a bear, an[illegible]t all his life-time. The ſkin of a bear generally coſts ———.

The wolves are almoſt all of a whitiſh grey colour; there are ſome of them white; and the rein-deer has no enemy more determined than the wolf. It avoids the wolf by flight; but when it is ſurpriſed by its adverſary, it defends itſelf with its fore feet, in which conſiſts its chief ſtrength, and with its horns, when they are ſtrong enough to ſuſtain the ſhock; for the rein-deer caſts their horns every year, and when they are new, they cannot be made uſe of. To prevent the wolves from attacking the rein-deer, the Laplanders tie them to ſome tree, and it ſeldom happens that they are attacked in that ſituation; for the wolf being a ſuſpicious animal, is afraid leſt there ſhould be ſome ſnare laid for him, and that this is employed as a bait to draw him thither. The ſkin of a wolf may be worth ——— and there are few perſons, even the greateſt nobles of Sweden, who do not wear dreſſes of its fur; and there is no better defence againſt the cold.

Foxes are abundant in every part of Lapland; they are almoſt all white, although ſome are found of the ordinary colour. Thoſe of a white colour are in little eſtimation; but ſometimes those of a black colour are met with, and theſe are the rareſt, and the moſt coſtly; their ſkins are ſometimes ſold for forty or fifty crowns; and the hair is ſo fine and ſo long, that it hangs from any ſide; ſo that, in taking the ſkin by the tail, the hair falls over the ſide of the ears, and lies towards the head. All the Princes of Muſcovy, and the nobles of this country ſeek with anxiety the furs of theſe ſkins; and, after thoſe of the ſable, they are the moſt eſteemed. But as I have mentioned the ſable, it is but proper that I ſhould mention to you all that I know of it. That which we denominate ſable, was formerly called *Zabel*. This animal is the ſame ſize with a pole-cat, and differs from the martin, in being of a leſs ſize, and in having much longer and finer hair. The true ſables are damaſked with black, and are caught in Tartary and Muſcovy; very few of them are found in Lapland. The blacker the hair is, the more is it ſought after, and is ſometimes worth ſixty crowns, although its ſkin be no more than four fingers in breadth. Some of a white or grey colour have been met with; and the Grand Duke of Muſcovy has made preſents of them to the King of Sweden by his ambaſſadors, as being ſkins exceedingly valuable.

The martins approach nearer to the ſable than any other animal, they imitate them pretty exactly in the fineneſs and length of their hair; but they are much larger. I have met with ſome as large as a cat, and there are few countries, in which they are more abundant than in Lapland. The ſkin is worth a rix-dollar, and thoſe of them whoſe ſkin is of an aſh-colour above the throat, are in higher eſtimation than thoſe who have it white in the ſame place. This animal makes a great havoc among the minevers, of whom it is extremely fond, and ſeizes them in the chace, without great difficulty: it does not live ſolely on ſquirrels, but it hunts alſo after birds; and mounting to the tops of trees, it waits till they are aſleep, and then jumps upon them, and devours them. If they are nevertheleſs ſtrong enough to fly, they abandon themſelves to the air with the martin, whoſe claws are as ſtrong and as ſharp as thoſe of any other animal, and which maintains itſelf on the back of the bird, and bites it in its flight, till at length the bird falls down dead. This fall is often equally fatal to the martin with the bird; and when it has riſen to a great height in the air, the martin frequently falls among rocks, where it is deſtroyed, and has no better fate than the other.

I have ſpoken in another place of the *jærts* in Swediſh, and *gulones* in Latin, when ſpeaking of the rein-deer, whom they cut in two. This animal is about the ſize of a dog; its colour is dark brown, and its ſkin is compared to thoſe of the ſables; it is damaſked, and very precious.

The quantity of fiſh is the reaſon why one meets with ſo many caſtors in Lapland, (the Swedes call them *baver*,) and they take great delight in thoſe places, where no noiſe of the traveller diſturbs their repoſe. But the beſt place to find them, is, in the province of Kimi and in Ruſſia. The kidney of this animal is employed in the cure of many diſeaſes. Every body aſſerts, that there is no greater ſpecific againſt the plague; and that, if it is taken every morning, it diſpels the bad air: it is alſo ſaid to be an ingredient in the moſt efficacious compoſitions. Olaüs, chief prieſt of the province of Pitha preſented me with the half of one at Torno, and aſſured me, that he made uſe of nothing elſe for his beſt remedies; he was well acquainted with pharmacy. He further aſſured me, that he extracted an oil from the tail of the ſame animal, and that there was no remedy of more efficacy in the world.

There are alſo in Lapland, a very great number of ermines, which the Swedes denominate *lekat*. This animal is about the thickneſs of a large rat, but twice as long. It does not always retain the ſame colour, for in ſummer, [illegible] ſomewhat red, and in winter, it changes its hair, and becomes as white as we ſee [illegible] tail is equally long with its body, and it terminates in a little point black as ink, ſo [illegible] ſo, that it is difficult to ſee an animal, which is at the ſame time either blacker or [illegible]ter. The ſkin of an ermine coſts four or five pence. The fleſh of this animal ſmells [illegible] agreeably, and it lives upon minevers, and mountain-rats. This laſt little animal, [illegible]y unknown every where elſe, and very ſingular, as you ſhall ſee, is ſometimes found in ſuch abundance, that the earth is wholly covered with them. The Laplanders call it *lemucat*; it is of the ſize of a rat, but the colour is redder, marked with black; and it ſeems as if it fell from heaven, for it is never ſeen, except after great rain. Theſe beaſts do not flee from the approaching traveller; but, on the contrary, run to him with a great noiſe; and when any one attacks them with a ſtick, or any other weapon, they turn upon him and bite the ſtick, to which they continue hanging by the teeth, like little angry dogs. They fight with the dogs, whom they are not afraid of, and leap upon their backs, and bite them ſo ſeverely, that the dogs are obliged to roll themſelves on the earth, to get rid of this little animal. It is even ſaid, that theſe animals are ſo warlike, that they ſometimes declare war againſt each other, and that when the two armies arrive near to the place which they have choſen for the field of battle, they fight bitterly. The Laplanders, who obſerve the quarrels of ſuch ſmall animals, conclude, that the battles of other individuals muſt be much more bloody; and they think that Sweden has a good right to go to war with Denmark or Muſcovy, who are her moſt mortal enemies. As theſe animals are warlike, they have alſo many enemies who make conſiderable havoc among them. The rein-deer eat all thoſe they can meet with. They are the moſt delicate food of the dogs; but they never eat their hind parts. The foxes fill their dens with them, and lay up magazines of them for times of ſcarcity; this vexes the Laplanders, who know when they have procured this food, for this prevents them from ſeeking food elſewhere, and from falling into the ſnares which have been laid for them. Even the ermines fatten themſelves on theſe animals. But that which is remarkable in this creature, is, its ſenſibility of it approaching deſtruction. Foreſeeing that it cannot live during winter, it retires to the top of a tree between two forked branches, where great numbers are caught; others of them, not reliſhing this kind of death, jump into lakes, where they are often in the body of the pike, newly ſwallowed; and thoſe of them, who do not wiſh to be the authors of their own deſtruction, and who patiently await their deſtination, periſh in the earth, when the rains which brought them into exiſtence, likewiſe deprive them of it. They chace a great number of hares,

who are generally quite white, and do not take their red colour, except during the two hotteſt months of the year.

There are almoſt as many birds as quadrupeds in Lapland. The eagle, the king of birds, is found in great abundance; and ſo prodigiouſly large are ſome of them, that they are able, as I have already ſaid, to carry off the young rein-deer, and take them to their neſts, which are at the top of the higheſt trees; on which account, it is neceſſary to have them always watched.

I do not believe, that there is any country in the world, which abounds more with ducks, teal, divers, ſwans, wild-geeſe, and other aquatic birds, than this; ſo perfectly covered are the rivers with them, that one can eaſily kill them with a ſtick. I do not know how we ſhould have lived during our journey had it not been for theſe animals, which were our uſual food; we ſometimes killed thirty or forty in a day, without ſtopping a moment, and we employed ourſelves in this buſineſs, only on the road. All theſe animals migrate, and leave this country in winter, for the purpoſe of viſiting warmer regions where they can find ſome rivers which are not frozen up; but they return in the month of May, when they depoſit their eggs in ſuch abundance, that the whole country is covered with them. The Laplanders take them in their nets, and the ſkin which has been flayed from the ſwan, is made uſe of as a bonnet; the others are uſed for food. There is a bird very plenty in this country, which they call *loom*, which furniſhes the inhabitants with their fineſt ornaments for the head. The plumage of this animal is of a violet and white colour, and is curled in a peculiar manner; it is the ſize of the gooſe, and is ſometimes taken in the nets which the fiſhermen employ to take fiſh, when the keenneſs for their prey carries them too far, and they purſue ſome fiſh under the water. They alſo adorn with its ſkin, the extremities of the fineſt gloves. The heath-cock and wood-hen are alſo found here in great abundance. But there is in this country a particular kind of bird which I have not ſeen elſewhere, which is denominated *ſnyeruiport*, and the Greeks called *lagopos*, about the ſize of a hen; the plumage of this bird in ſummer is grey, of the ſame colour with a pheaſant, and in winter, it is quite white, like all the animals that live in this country; and beneficent nature gives them the ſame colour with the ſnow, that they may not be recognized by the hunter, who could eaſily perceive them, if they were of any other colour than the ſnow, with which the earth is totally covered. I have already deſcribed this animal: its taſte is more ſavoury than that of a partridge, and it gives, by its cry, a certain mark that it will ſoon fall among the ſnow, as may be eaſily underſtood by its name which ſignifies *bird of the ſnow*. The Laplanders place their nets upon the ſnow, and form a little hollow, in the midſt of which they leave an empty ſpace, where the ſnares are placed, and through which the birds muſt paſs.

It is impoſſible to conceive the quantity of fiſh in Lapland. It is every where interſected by rivers, lakes, and rivulets, and ſo full of fiſh are thoſe rivers, lakes, and rivulets, that a man can take as many with a ſingle line in half an hour, as he is able to carry. This is alſo the ſole nouriſhment of the Laplanders; they have no other bread; and they do not catch them ſolely for their own uſe; they form the only article of their commerce, and purchaſe thoſe commodities they ſtand in need of, with fiſh or ſkins; for which reaſon, fiſhing is all their occupation; for whether they wiſh to eat, or to indulge themſelves in luxury, which is not ſuffered to reign in this country, they have no other means of doing ſo. It is true, that the rich never fiſh; the poor fiſh for them; and they give them tobacco, or ſpirits, or iron, or ſome article of that nature, in exchange. Without ſtopping to take notice of all the fiſh in this country, I will mention, that there is no place where ſalmon are found in greater abundance. They begin to arrive in the month of May, and they are, at that time, much

fatter

fatter and more delicious than in the month of September, when they return. There are ſome years when, in the river of Torno alone, they fiſh to the amount of three thouſand tons, which are ſent to Stockholm, and to all the inhabitants of the Baltic Sea, and the Bothnian Gulf. The pike is equally abundant with the ſalmon; they dry them, and carry immenſe quantities of them. I have already deſcribed the method they employ to fiſh at night, by the light of a large fire which they kindle on the prow of their boats. The trout is very frequently met with: but there is a kind of fiſh which I never ſaw before, and which they call *fiel*; it is of the ſize of a herring, and extremely delicate.

After having remained ſome days with theſe Laplanders, and learned from them all the information we wiſhed, we returned by that road which led us to the prieſt; and on the ſame day, Wedneſday, the twenty-ſeventh of Auguſt, we left him, and ſlept at Cokluanda, which is the boundary between Bothnia and Lapland. But, Sir, I know not whether you conſider it ſtrange that I ſhould have talked to you ſo much of the Laplanders, while I have ſaid nothing of Lapland. I do not know how it has happened, but I am going to end where I ſhould have begun: but it is better to ſpeak of it late, than not at all; and before I leave the ſubject, I will tell you all I know reſpecting it.

I cannot tell you what name this province was known by among the ancient geographers, becauſe it was unknown to them: and Tacitus and Ptolemy know no province more diſtant than Scrifinia, which we now call Bothnia, or Biarmia, and which ſtretches along the Bothnian Gulf. All that we know of Lapland to-day is, that it is divided into eaſt and weſt: on the weſt it faces Iceland, and is under the dominion of the King of Denmark; on the eaſtern ſide it is bounded by the White Sea, in which the port of Archangel is ſituated, which belongs to the Grand Duke of Muſcovy. It is proper to add a third diviſion, which is in the middle of theſe two, and which is much larger than both the others, and this is under the government of Sweden, and is divided into five different provinces, which have all the general name of Lapland; and are called Uma Lapmarch, Pitha Lapmarch, Lula Lapmarch, Torna Lapmarch, and Kimi Lapmarch. They take their names from the rivers which water them; and theſe ſame rivers give all their names to the cities they paſs, if this appellation may be given to a parcel of huts made of trees.

The province of Torna Lapmarch, which is exactly ſituated at the bottom of the Gulf of Bithynia, is the furtheſt in the world on the ſide of the arctic pole, and extends as far as the North Cape. Charles the Ninth, King of Sweden, being anxious to know the ſituation and extent of his dominions, ſent to this place, at various times in the year 1600, two illuſtrious mathematicians, the one called Aaron Forſius, a Swede, and the other Jerome Bircholto, a German. Theſe individuals performed the journey, with all the neceſſary proviſions and inſtruments, very ſucceſsfully; and they reported on their return that they found no continent on the north beyond the ſeventy-third degree of latitude, but an immenſe frozen ocean; and the laſt promontory which bordered on the ſea was Nuchus, or Norkap, not far from caſtle Wardhus, which belongs to the Danes. It was in this part of Lapland that we travelled; and we have re-aſcended the river which waters it to the ſource.

We arrived next day at Jacomus Maſtung, which was only diſtant two leagues from the place where we had ſlept: we made three or four on foot in order to arrive at it, and we did not loſe our labour. There is at this place a very good iron mine, but it is almoſt abandoned, on account of its great diſtance. We went thither to ſee the iron-work; but although we were diſappointed in this expectation, we were more fortunate than we expected: we went into the mine, from whence we procured very beautiful

ſtones

ſtones of adamant. We obſerved with much pleaſure the ſurpriſing effects of this ſtone, when it is ſtill in its native ſtate: it required a great deal of force to ſeparate ſtones ſo large as thoſe we wiſhed to procure; and the hammer that was employed, which was as thick as a man's thigh, remained ſo fixed when it fell on the chiſſel in the ſtone, that the man who ſtruck with it required ſome aſſiſtance before he could withdraw it. I wiſhed to try this myſelf; and having taken a large iron-bar, ſimilar to that which is employed to lift the heavieſt bodies, and which I could ſcarcely move, I ſtruck the chiſſel, which bounded with extreme violence, and ſuſtained the ſhock with inconceivable force: I put a compaſs, which I had, in the middle of the aperture of the mine, and the needle turned round with inconceivable rapidity: we took the beſt ſtones, and remained no longer in this place. We went to find our boats, and travelled to ſleep at Tuna Hianda, at the houſe of one of our boatmen, who ſhowed us his letters of exemption from taxes, which he had received from the King, for diſcovering this iron-mine. This peaſant called himſelf Lars Larzon, Laurentius à Laurentio.

The next day, Sunday, we travelled a conſiderable way, and arrived in the evening at Koenges, where we had ſtopt a day in paſſing. We purchaſed in this place ſledges, and all the harneſs which is neceſſary to yoke the rein-deer; they coſt us a ducat each. We did not depart till Monday at mid-day, as we were obliged to wait for the boats, which were at a great diſtance, and which it was neceſſary to carry a great way, to avoid the cataracts, which are extremely violent in this place. We ſlept this night at Pello, where we had the pleaſure of ſeeing on our arrival that method of fiſhing the pike, of which I have already ſpoken to you, and which appeared to me ſo aſtoniſhing. It is not ſurpriſing that the inhabitants of this country ſhould adopt every poſſible method of catching fiſh: they have nothing elſe to ſubſiſt on; and nature, which often gives the remedy along with the diſeaſe, when refuſing grain to this people, gives them fiſh in greater abundance than in any other country in the world. We came next day, being the firſt of September, to ſleep at the houſe of the magiſtrate of Lapland, a German, of whom I have already ſpoken; and on the next day we arrived at Torno, after having paſſed more than fifty cataracts. Theſe cataracts are very impetuous falls of water, which make a dreadful noiſe in falling: there are ſome which continue during the length of two or three leagues; and it is the greateſt pleaſure in the world to ſee theſe torrents deſcending with an inconceivable ſwiftneſs, and making three or four Swediſh miles in an hour, which are equal to twelve French leagues. The more ſtrong the cataract is, it is neceſſary to ply the oar with the greater vigour, in order to defend the boat againſt the waves; by which means, being at the ſame time hurried on by the torrent, and aſſiſted by the oar, you make an aſtoniſhing diſtance in a little time.

We arrived at Torno on Tueſday, and we came in good time to ſee the ceremony of the funeral of John Tornæus, whom I formerly mentioned, and who had been dead two months. It is the cuſtom in Sweden to keep the bodies of their dead a very long time: this length of time depends on the quality of the deceaſed; and the higher the rank of the perſon, the longer is the funeral deferred. This time is afforded, that every thing may be prepared for this event, which is the moſt ſolemn that takes place in this country; and if it be ſaid that the Turks lay out their property on marriages, the Jews on circumciſions, and the chriſtians on law-ſuits, we may add, the Swedes on their funerals. In fact, I was aſtoniſhed at the great expence laid out upon the funeral of a man who was not by any means of rank, and that too in a country ſo barbarous, and at ſuch a diſtance from the reſt of the world. They had no ſooner heard of our arrival, than the ſon-in-law of the defunct immediately began to ſtudy a Latin oration, which he intended to deliver the next day in our preſence, inviting us to attend his father's funeral:

he

he was dreaming about it the whole night; and when he came before us next day, he had forgotten the whole of his diſcourſe. If low bows ſay any thing, and be the marks of eloquence, I can aſſure you that our haranguer was the prince of orators; but I believe the bending of his body was employed rather to hide the confuſion which appeared upon his countenance, than to adorn his diſcourſe. As we were acquainted with the object of his viſit, we underſtood that he came to requeſt our aſſiſtance at the ceremony, for we could underſtand nothing from his diſcourſe; and a ſhort time after the burgomaſter of the city, with an officer who was there in garriſon, came to take us in their boat acroſs the water to the houſe of the deceaſed. On our arrival we found the whole houſe filled with prieſts, habited in long cloaks, and hats which appeared by their height to be columns employed to ſupport ſome beam of a houſe. The body of the deceaſed was depoſited in a coffin, covered with cloth, and placed in the middle of them. They watered him with their tears, which trickled down their moiſtened beards, the ſeparated hairs of which formed various channels, and diſtilled this ſorrowful humour, which was employed inſtead of holy-water. All theſe prieſts had left their pariſhes, and had come from a great diſtance: ſome of them had travelled more than a hundred leagues; and we were aſſured that ſuch is their regard for this ceremony, if it had happened in winter, when the roads are in the beſt ſituation for travelling, there was no prieſt within two hundred leagues diſtance who would not have attended. The oldeſt delivered a funeral oration to all his aſſiſtants; and he muſt ſurely have ſaid ſomething very affecting, ſince his mournful air had almoſt drawn forth even our tears, who knew not a word he ſpoke. The women were in a little chamber ſeparated from the men, and they groaned in a dreadful manner; among others, the widow of the deceaſed interrupted by her ſighs the diſcourſe of the preacher. While this ſermon was delivered here, another was preached in the Finland tongue at the church; and when the two diſcourſes were ended, they ſet out to conduct the body to the church. Seven or eight reſpectable inhabitants carried him on their ſhoulders, and every one was anxious to lend their aid. This brought to my recollection what Virgil ſays of the entrance of the horſe into Troy, when he mentions that both young and old were anxious to lend their aid to draw that machine into their city: *Funemque manu contingere gaudent.* We followed the corpſe like the chief mourners; and the widow was afterwards conducted under the arms of two of her daughters, the one of whom grieved much, while the other ſeemed not at all affected. The body was placed in the middle of the church, while ſome pſalms were ſung; and the women, in paſſing by the deceaſed, threw themſelves upon the coffin, and embraced him for the laſt time. Now commenced the grand and principal funeral oration, delivered by John Plantinus, prieſt of Urna, who received a diſh made of ſilver for his trouble. I cannot ſay whether he merited it; but I know that he cried much: and that to render every object more ſad, he made himſelf hideous, in leaving his hair in diſorder, and full of pieces of ſtraw, which he had not had time to take out of it. This man related every occurrence in the life of the deceaſed, from his birth to his laſt ſigh: he mentioned the places, and the maſters whom he had ſerved, the provinces which he had ſeen, and did not omit the minuteſt circumſtance of his life. It is the cuſtom in this country to deliver a funeral oration over lacqueys and ſervants, provided the relations are able to pay a crown to the orator.

I attended through curioſity the funeral of a ſervant at Stockholm. The prieſt who delivered her funeral oration, after mentioning the place of her birth, and her relations, expatiated on the good qualities of the deceaſed, and exaggerated highly her knowledge of kitchen-work, diſtributing his diſcourſe into various diviſions, according to the number of ragouts which ſhe knew how to prepare; and formed a part of his oration, by telling

telling them that ſhe had only one fault, that of making every thing too ſalt, and that ſhe ſhewed by this conduct the regard ſhe had for prudence, of which ſalt is the ſymbol, and her little regard for the things of this world, which ſhe threw away in profuſion. You may ſee by this, Sir, that there are few people who may not give occaſion to a funeral ſpeech, and furniſh an orator with a wide field for the diſplay of his eloquence. But our preſent ſubject had a more noble career. John Tornæus was a learned man: he had travelled, and had even viſited France, as tutor to Count Charles Oxenſtiern. When the funeral oration was ended, they came up to us and paid us a compliment in Latin, deſiring us to ſtay to the banquet. Although we underſtood no more of this compliment than we had done of the firſt, we had no difficulty in gueſſing what they wiſhed to ſay: our ſtomachs informed us very intelligibly what it was; and they complained ſo loudly that it was near three o'clock, and that they had not yet eaten, that it was no more difficult for theſe people to underſtand our language, than for us to underſtand theirs. They conducted us into a large hall, in which were three long tables; and this was the moſt honourable place. There were beſides theſe five or ſix other tables, ſtill better covered, for the entertainment of all the people who were preſent. The preludes to the repaſt were ſpirituous liquors, beer, and another liquor which they call *calchat*, compoſed of beer, wine, and ſugar; two of the moſt execrable liquids which could enter the human body. The tables were at length ſerved; and they placed us at the upper end of the firſt table, with the prieſts of the higheſt rank, ſuch as the chief preacher and others. They commenced their meal in ſilence, as is the general cuſtom, and as the ſeaſon demanded; which led Plantin to remark, who was at my ſide, that they called the gueſts *Nelli*. *N* ſignifies *Neque vox, nec ſermo egreditur ex ore eorum; loquebantur variis linguis; in omnem terram exivit ſonus eorum.* All theſe words are taken from ſcripture; and I do not believe that it is poſſible to apply them better than on this occaſion; for one can ſcarcely figure a more exact repreſentation of the marriage at Cana, than the picture in which it was now repreſented to us, more beautiful and more natural than that of Paul Veroneſe. The tables were covered with ſtrange, and, if I may uſe the expreſſion, antique diſhes; for it had been at leaſt eight days ſince they were dreſſed. Large pots of different kinds, made for the moſt part like thoſe which were uſed at the ſacrifices of the ancients, covered this table, and produced by their number a confuſion ſimilar to that which took place at the banquets of the ancients. But what gave the finiſhing ſtroke to this picture, was the venerable air of all the prieſts, clothed in their beards, and the Finland dreſs of all the gueſts, which are as becoming as can well be imagined. There was among others a little old man, with ſhort hair, a thick beard, and a bald forehead: I do not believe that a more exact repreſentation of the figure of Saint Peter could poſſibly be produced by the imagination of any painter. This man wore a green robe, turned up with yellow, without any ſhape, and producing the effect of a drapery tied with a ſaſh. I could not ceaſe contemplating this man, who was the brother of the deceaſed. Whilſt I was engaged in looking at this man, the reſt were employed in more important occupations, and were drinking to the honour of the defunct, and the proſperity of his family, in an aſtoniſhing manner. The prieſts, like the beſt friends, drank the moſt copiouſly; and after having toaſted ſeveral healths, they came at length to kings and great men. They began firſt by drinking to the health of handſome girls, which is the cuſtom throughout all Sweden, and from thence they roſe to kings. Theſe healths are drank out of veſſels, the ſize of which is proportioned to the rank of theſe royal perſonages; and to induce me to drink they propoſed the health of the King of France, in a veſſel as much larger than the reſt, as this monarch ſurpaſſes the other kings in power. It would have been a crime to refuſe this toaſt; I

drank it, and emptied the pot very courageouſly. It was not likely that, as we were in Sweden, we ſhould drink the King of France's health and forget that of the King of Sweden; it was therefore drank out of a veſſel which was ſcarcely inferior in ſize to that of the other; and after having drank ſeveral healths out of it, every one was ſilent to ſay prayers. It happened unluckily that at this time one of our party ſaid ſomething witty, and obliged us to burſt out into loud laughter, which continued ſo long, that the whole aſſembly, whoſe eyes were turned towards him, were extremely diſpleaſed: and what was ſtill more vexing was, that as every one was uncovered during the repaſt, on account of our being preſent, our hats had been carried away; ſo that we had no means of hiding the laugh, which we were unable to reſiſt, and the more we endeavoured to ſtifle it, the more it burſt out: on which account the prieſts, ſuppoſing that we made a jeſt of their religion, left the aſſembly, and were unwilling to return. We were informed by a little prieſt, who was more our friend than the reſt, that they had determined to attack us on the ſubject of religion: however, we avoided talking with them on this ſubject, and we went to find them in another place, to which the company had retired for the purpoſe of ſmoking, whilſt the ſervants cleared the tables: they brought, as a deſert, pipes and tobacco, and all the prieſts drank and ſmoked till they fell under the table. In this manner it was that they watered the grave of John Tornæus; and thus the feaſt ended. Olaüs Graan, ſon-in-law of the deceaſed, endeavoured as well as he was able to conduct us to our boat, with his pot in his hand, but his legs failed him; he was very near falling into the river; and he was obliged to be carried home by two men.

We believed that the whole ceremony was finiſhed, when next morning Olaüs Graan again made his appearance, followed by ſome other prieſts, who came to requeſt our attendance on the morrow. I aſſure you, Sir, that this ſurpriſed me; I had never heard of a ſecond day's feaſt, except at a marriage, and I did not ſuppoſe that it was the ſame with regard to funerals. We were neceſſitated to reſolve on a ſecond attendance, and we had a conference with Olaüs Graan during the happy interval he enjoyed between paſt and future drunkenneſs.

This Olaüs Graan, ſon-in-law of the deceaſed, is prieſt of the province of Pitha; a learned man, or at leaſt calling himſelf ſuch, a geographer, chemiſt, ſurgeon, mathematician, and above all pluming himſelf on his knowledge of the French language, which he ſpoke in a manner you may have ſome idea of from the following compliment he paid us: "La grand ciel," he repeated ſeveral times, "conſerve vous et votre applicabilité, "tout le temps que vous verrez vos gris cheveux." 'The great heaven preſerve you, 'and your applicability, every time that you look upon your grey hairs.' He ſhewed us two medals, the one of Queen Chriſtina, and the other a ſhekel of the Jews, which on one ſide repreſented the rod of Moſes; and on the other, a cup from whence a kind of incenſe iſſued. Beſides all his other qualifications, he pretended to poſſeſs a perfect knowledge of pharmacy; and to convince us, he drew from ſeveral pockets a quantity of boxes of all ſizes, and of cordials ſufficient to fill an apothecary's ſhop. He gave me a piece of the teſticle of a caſtor, and aſſured me that he extracted an excellent oil from the tail of this animal, which was uſeful in all kinds of diſeaſes. When our converſation was finiſhed, we were conducted to the place where we had been the day before, where every one, to pay honour to the defunct, drank plentifully, and thoſe who were able returned home.

We remained at Torno on our return from Lapland eight days. Wedneſday and Thurſday were ſpent at the funeral; Friday, Saturday, and Sunday were only diſtinguiſhed by the frequent viſits we received, when it was neceſſary to make every one drink. On Monday the burgomaſter gave us a dinner; and on Tueſday at day-break, the

the wind being weſterly, we ſet ſail. The wind continued very good the whole day, at night it became leſs violent; and next day, Wedneſday, we were becalmed. On Thurſday the weather was equally unfavourable, and we remained motionleſs like towers. We heaved the lead ſeveral times to make ſoundings, but not being able to find any, we continued our courſe in continual apprehenſions of running aground ſomewhere. On Friday the miſt having diſperſed, we made a little way by means of an eaſt and north-eaſt wind, and we paſſed the little iſlands of Querken; but the wind being contrary next day, we were obliged to turn back, and to reſt ourſelves in a port called Ratan. We ſpent part of this day in a neighbouring iſland at the chace; and in the evening we went to church at about half a league's diſtance. The prieſt gave us a ſupper; but fearing that we had freſh young men returning from Lapmark, who would be anxious to make ſome attack upon his honour, he anxiouſly endeavoured, leſt we ſhould have ſpent the night with him, to convince us that the wind was fair, although it was completely contrary. We returned to our boat to paſs the night, after having purchaſed a hare at his houſe; and on Sunday morning the major of the regiment of this province ſent two ſoldiers to the boat to inquire after us: we waited on him, and found all his officers preſent, beſides a good dinner prepared for us. We were obliged to drink in the Swediſh manner, that is to ſay, to empty the bowls at one draught; and when we came to the health of the King, they brought upon a diſh three glaſſes full of liquor, which were completely emptied. I confeſs that I had never before experienced this triplicity of glaſſes full, and that I was as much aſtoniſhed at obſerving that it did not ſuffice to drink the toaſt out of one. It is alſo a part of the ceremony here to turn the glaſs upſide down on the diſh, to ſhew that the liquor has been faithfully drank. We returned to our veſſel; and next day, at ſix o'clock of the morning, we went to ſee how the wind blew: it was eaſterly; and ſuch was the ignorance of our captain and our pilot, that they believed we could not go out of the port with this wind. I aſſerted the contrary, and I induced them to venture on departing from the harbour: we did ſo without any accident; and at mid-day the wind became ſo ſtrong at north-eaſt, that after continuing ſo the whole night, and on Thurſday till mid-day, we made during twenty-four hours more than a hundred leagues; but the wind having fallen all at once, we remained at a diſtance of eight leagues from Agbon, a place where it was neceſſary for us to land, in order to travel by land to Coperberyt. We were unable to do ſo till next day; and having fortunately found on the ſhore ſome little boats which were returning from the fair of Herneſautes, we ſlept at Withſeval, a little town on the border of the Gulf of Bothnia, and the next day we took poſt-horſes, and made a very diſagreeable journey, partly on account of the roughneſs of the roads, and partly on account of our being ſo little accuſtomed of late to travel poſt, for which reaſon we felt more acutely the fatigues of it. We loſt our way during the night in the woods; and if it be at any time vexatious to wander in darkneſs, it is much more ſo in Sweden, in a country full of eternal precipices and foreſts, where we were totally ignorant of every word of the language, and where it was impoſſible to find one to inform us of the road when we required it. Nevertheleſs, after advancing a conſiderable way on our road, during a dreadful rain, with the aſſiſtance of a little candle, a thouſand times more agreeable in this dark night than the moſt beautiful ſun in one of the fineſt days in ſummer, we arrived at the poſt-houſe; and next Friday, being much fatigued with our preceding day's journey, we only travelled three leagues, and ſlept at Alta. We ſet out at ſix o'clock in the morning, that we might be able to make four Swediſh miles, which are equal to twelve French leagues; and after having travelled till two o'clock of the afternoon, we arrived at a wretched hut, which we could not believe was the place where we were to change horſes, which however was the caſe; but finding no perſon

to ſpeak to, we continued our journey by roads which no one can conceive the difficulty of except thoſe who have paſſed them. We believed that we were very near the poſt-houſe, and we travelled till four o'clock without ſeeing a ſingle individual to direct us on our road, or any roof to cover our heads. To add to our misfortune, the rain fell in ſuch quantity, that it made up this night for the three preceding months, during which not a ſingle drop of water fell. The hope with which we flattered ourſelves that we would meet with ſome peaſant's hut, enabled us, notwithſtanding the dreadful fatigue with which we were affected, to continue on our journey; but at length the rain fell ſo plentifully, and the night became ſo dark, that our horſes diſheartened, not having eaten any food, like ourſelves, during the whole day, ſtopped on a ſudden, and we found it impoſſible to make them advance one ſtep.

Behold us then ſorrowfully remaining in the middle of the wood, without having any thing in the world to cover us, except the belly of our horſes; and one might do ſo without danger, for the poor animals were ſo fatigued that they paſſed the night without ſtirring, and without eating, as well as their maſters. Our only conſolation was a good fire that we made, which warmed us a little; but nothing could be more amuſing than to ſee us in this plight, all extremely ſad and overcome, like men who had not eaten for twenty-four hours, and who languidly bowed their heads to receive the rain which it pleaſed heaven to pour down plentifully upon us. And what tended to make our adventure ſtill more curious was, that next morning, by the break of day, we were no ſooner on horſeback than we diſcovered, at a diſtance of about two gun-ſhot, a little houſe which we had ſo anxiouſly inquired after, and to which we repaired to drink ſome milk. *Misfortune is good for ſomething*, they ſay; for this wandering enabled us to reach Coperberyt the next day, which was Sunday, where we ſhould not otherwiſe have arrived till the day after: we diſcovered that town by means of the ſmoke which iſſued from it, and which reſembled more the ſhop of Vulcan than any thing elſe: nothing was to be ſeen on every ſide but furnaces, fires, coals, and frightful cyclops. It is neceſſary to deſcend to the town through holes. * To give you an idea of the frightfulneſs of it, they conducted us firſt into a chamber to change our clothes, where we took a ſtick ſhod with iron to ſupport us in the moſt dangerous places: we at length deſcended to the mine, which is aſtoniſhingly wide and deep. We ſcarcely perceived the workmen, ſome of whom were raiſing ſtones, others throwing earth, and others making fires to looſen the mine, and every one, in fact, at his ſeparate employment. We deſcended this pit by a number of roads which led to it; and we now began to find that we had as yet done nothing, and that this was only a beginning to more ſerious labours. Our guides lighted their flambeaux, which were ſcarcely ſufficient to diſpel the thick darkneſs which reigned in theſe ſubterraneous regions. One ſees nothing on every ſide, and that too by endangering the ſight, but ſubjects of horror, by the aid of ſome glimmering lights which are only ſufficient to enable one to diſtinguiſh them; the ſmoke blinds, and the ſulphur choaks one: add to this the noiſe of the hammers, and the view of theſe ſhades, theſe wretches, who are ſtark-naked, and black like devils, and you will be of my opinion, that nothing can be a better repreſentation of hell than this living picture, painted with the blackeſt and moſt ſombre pictures that can poſſibly be imagined. We deſcended more than two leagues into the earth by frightful roads, ſometimes on trembling ladders, ſometimes on thin planks, and always in continual apprehenſions. We obſerved on the road a number of pumps to raiſe the water, and very curious machines which we had not leiſure to examine; we only ſaw numbers of thoſe wretches who wrought at the pumps. We penetrated to the very bottom with great diffi-

*. This deſcription is preſerved, though nearly a repetition.

culty; but when we began to re-aſcend, the ſulphur choaked us to ſuch a degree, that it was after inconceivable pain that we regained the firſt deſcent: we were obliged ſeveral times to throw ourſelves upon the earth, and our knees being unable to ſupport us, we were obliged to walk by the aſſiſtance of our hands. We at length arrived, after dreadful exertions, at the mouth of the mine: here it was that we began to breathe, in the ſame manner as a ſoul drawn out of purgatory. A pitiable object now preſented itſelf to our ſight: they were carrying away one of thoſe miſerable wretches who had been cruſhed by a little ſtone, which the fall from a great height had rendered dangerous. Theſe poor people expoſe their lives very lightly: they receive ſixpence a day; and there are ſix or ſeven hundred men conſtantly employed in this place. I know not whether we have more reaſon to pity the lot of theſe wretches who work in this infernal place, or to curſe the avarice of thoſe men who, for the purpoſe of gratifying their luxury, tear out the bowels of the earth, confound the elements, and reverſe the order of nature. Boethius had good reaſon to ſay, ſpeaking of his own age,

"Heu! primus quis fuit ille
Auri, qui pondera tecti,
Gemmaſque latere volentes,
Pretioſa pericula fodit?"

And Pliny tells us that the Romans, who had more need of men than gold, would not ſuffer thoſe mines to be opened which had been diſcovered in Italy. The Spaniards go to Guinea for wretches whom they deſtine to labour at their rock of Potoſi; and there are ſome countries which ſend thoſe thither whoſe crimes have merited death, and who continue to dig their graves their whole lives.

In this mine of Coperberyt are found native ſulphur, blue and green vitriol, and octadrons; the latter are curious ſtones, natuarlly cut into an octagon ſhape. We departed from this place the ſame day to viſit the ſilver mine at Sallberyt; we arrived there next day, which was Tueſday: its real name is Sala; and its ſituation is one of the moſt pleaſant in Sweden. Next day we went to the mine which is a quarter of a mile diſtant from it: this mine has three large mouths, like pits, of which it is impoſſible to ſee the bottom; the half of a tub, ſupported by a rope, is the only ſtair which leads to this abyſs: the water makes this machine move in a curious manner; it wheels about and turns on both ſides, for the purpoſe of aſcending and deſcending. The imminence of the hazard can eaſily be conceived; you are half in a tub in which you have only one leg; a ſatellite, black as a devil, with a flambeau in his hand, deſcends along with you, chaunting a mournful ſong, made on purpoſe for this deſcent. The mode of travelling is pleaſant enough; but one can ſcarcely be quite at eaſe here, when one ſees one's ſelf at the end of a rope, and remembers that one's life depends entirely on its ſtrength, or its weakneſs. When we had reached the middle we began to experience great cold, which joined to the torrents which fell from all quarters, rouſed us from our lethargy.

We arrived at length, after half an hour's journey, at the bottom of this abyſs: here our fears began to diſperſe; we no more beheld any frightful objects: on the contrary, every object ſparkled in theſe ſubterraneous regions; and after having deſcended ſtill farther, ſupported by extremely high ladders, we arrived at a ſaloon, which is at the bottom of the mine, ſupported by columns of this precious metal: four ſpacious galleries next appeared; and the light of the fires which burned on all ſides, and which ſparkled on the vaults of ſilver, and a clear rivulet which flowed by their ſide, tended leſs to afford light to the workmen, than to render this the moſt magnificent abode which can well be imagined, and ſomewhat like the enchanted palaces of Pluto, which

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the poets have placed in the centre of the earth, where ſhe preſerves her treaſures. In theſe galleries men of all countries are conſtantly to be found, who labour hard to find that, which gives ſo much delight to the reſt of mankind. Some draw carriages; ſome roll ſtones; ſome are dividing rocks; and every one has his different employment. It is a town below another town: here are taverns, houſes, ſtables, and horſes; and what is moſt aſtoniſhing of all is a wind-mill, which goes continually in this cavern, and which is employed in raiſing the water. We re-aſcend by the ſame machine in which we deſcended, in order to ſee the various operations neceſſary to make ſilver. The firſt ſtones which are drawn from the mine are called *ſtuff*, and are placed in a furnace to dry, which burns ſlowly, and ſeparates the antimony, arſenic, and ſulphur from the ſtone, the lead, and the ſilver, which remain together. This firſt operation is followed by a ſecond, when theſe dried ſtones are thrown into troughs, where they are piled up and reduced to powder, by means of large hammers wrought by water. This powder is depoſited in water, which runs conſtantly upon a plank placed in a ſloping direction, and which carrying off the groſſer particles, leaves the ſilver and the lead behind at the bottom on a cloth. The third operation ſeparates the ſilver from the lead, which falls to the bottom in droſs; and the fourth ſerves at length to bring it to perfection, and to put it in a condition fit for the hammer. One would not ſuppoſe that ſo many operations were neceſſary to produce a metal which is only an excrement of the earth. The Spaniards at Potoſi do not give themſelves the trouble of performing all theſe operations in order to purify their ſilver, as they have diſcovered the method of cleaning it with quickſilver, which being an enemy of all the other metals, which it deſtroys, except ſilver and gold, it ſeparates them of all their groſſer and earthy matter, in order to unite itſelf entirely to them. Mercury is found in this mine; and this metal, though ſome refuſe it the appellation becauſe it is not malleable, is perhaps one of the rareſt productions of nature; for being liquid and flowing of itſelf, it is the heavieſt body in the world; and it changes to the lighteſt, and is reſolved into vapour, which, encountering a ſolid ſubſtance, or a cold atmoſphere, immediately becomes thick, and reaſſumes it former form, without any poſſibility of ever being deſtroyed. The perſon who conducted us in the mines afterwards ſhewed us in her poſſeſſion, a number of curious ſtones which ſhe collected from all quarters; among others a large piece of that ſoft ſtone, which inſtead of being conſumed by the fire, aſſumes a white colour, and which the Romans employed to burn the bodies of their dead. She had found it in this mine, and preſented each of us with a ſmall piece of it. We left this little town the ſame day to go to Upſal, where we arrived early next morning.

This is the moſt conſiderable town of all Sweden, both on account of its univerſity and its ſituation; it is to this place, that all thoſe who intend entering into holy orders are ſent, from which profeſſion, all the Swediſh nobility are excluded; for, it is the policy of this country, leſt the number of nobles ſhould be diminiſhed, to employ them more uſefully otherwiſe. We ſaw the library, which contains nothing worthy of notice, except the *codex argenteus* manuſcript, written in Gothic letters of ſilver, by a biſhop called Ulphila, in Meſia, about the year 370, found at the deſtruction of the city of Prague, and brought away by Count Koningſmark, who made a preſent of it to Queen Chriſtina. We went afterwards to the church, where we ſaw the tomb of Saint Eric, King of Sweden, who was beheaded. They gave us his head and his bones to touch, which are wholly preſerved in a box of ſilver. We ſaw in a large chapel behind the quire, the tomb of Guſtavus the Firſt, and his two wives, one of whom had in her hand a whip, on account of her cruelty. They ſhewed us in the veſtry, an ancient idol called *Thor*, which the Swedes adored, and a very beautiful communion-cup, which

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was a preſent from Queen Chriſtina. There are ſeveral learned men here, and among others, Rudbekius, a phyſician, who has written a very curious book, which he ſhewed us himſelf. This man ſhews, by all that is contained in authors, ſuch as Herodotus, Plato, Diodorus of Sicily, and others, that the gods came from his country: he gives very ſtrong reaſons for it: he perſuades us from the connection which ſubſiſts betwixt his language and all the names of the gods. Hercules is derived from *her* and *coule*, which ſignifies *Captain*, and Diana comes from the Gothic word *dia*, which ſignifies *nurſe*. He ſhewed us, that the Heſperian apples had been in this place, which rendered thoſe immortal who taſted them. He pointed out to us, that this immortality aroſe from knowledge, which makes men live for ever. He mentioned a paſſage in Plato, where addreſſing himſelf to the Romans he tells them, that they had received their gods from the Greeks, and that the Greeks had taken them from the Barbarians. He anxiouſly endeavoured to perſuade us, that the pillars of Hercules were ſituated in his country, and a number of other matters, which you may believe if you chooſe.

We ſaw in his cabinet many pieces of mechaniſm; one of the Runic ſticks to learn the courſe of the ſun, which the Swedes according to his account, knew before the Egyptians and the Chaldeans; all the Runic letters are made in the form of a dragon, which he ſaid, is the ſame with that which guarded the garden of the Heſperides; the Runic letters which the Swedes made uſe of were only ſixteen in number. Ovenius is ſtill a celebrated phyſician. Rédelius and Loxenius are celebrated, the firſt for antiquities, and the other for juriſprudence: Columbus for hiſtory, and Sheffer, who has written reſpecting the Laplanders, is much eſteemed for logic. In the old town of Upſal, a number of antiquities are to be ſeen, ſuch as the tombs of the Kings of Sweden, and the four-fronted temple of Janus, which is one of the ſubjects on which Rudbekius has written. We went on board a little boat, which was bound for Stockholm, for certain reaſons; but the wind which was favourable, having changed, being ſtill within view of Upſal, we travelled two large Swediſh miles, which are equal to five or ſix French leagues, and arrived at the poſt-houſe, where we took horſes, and they conducted us, in the night time to Stockholm, which we entered at four o'clock in the morning of Saturday the 27th of December. Here at length terminated our hazardous journey, of which I would not have been deprived for a great deal of money, and which I would not begin again for much more.

A JOURNEY TO POLAND.

We left Stockholm, on the third day of October 1683, to go to Dalles for the purpoſe of finding our veſſel, which had departed two days before us. We were eſcorted by all our good friends, a league beyond the city: when we took leave of them, and travelled the whole night, we arrived next day at Dalles. This is the place where the duties upon all the goods which enter or are exported, are paid to the King of Sweden: it is here, where the rocks which ſurround Stockholm are firſt obſerved, and among which it is difficult to travel. Our boat was not yet there, but it arrived on the morrow at mid-day; it came from Stettin, in Pomerania, which belongs to the King of Sweden, and which gave ſo much employment during the late wars, to the troops of the elector of Brandenburg, who remained nine months before its walls, which were only defended by a few reſpectable inhabitants. It has been ſince given up to the King of Sweden, as well as all the other places he had loſt, which the King of France obliged them

them to return to him. We ſet out next day, being Sunday, at day-break, with a favourable wind, which changed immediately after, and obliged us to go for ſafety to Landſor, near to the place from which we had ſet ſail. We had conſiderable difficulty in retiring between two rocks, which ſerved us as a ſhelter from the tempeſt which was extremely violent, and we expected a hundred times to be driven among the ſtones, with which this ſea is crowded. The fourth day of October is celebrated for being unfavourable to us: it is juſt three years ſince, on this day, dedicated to Saint Francis, my patron, we were taken priſoners by the Turks, in the Mediterranean, within ſight of Nice. It is difficult to forget theſe days, when they are drawn in our memory with ſuch ſtrong and vivid colours. We remained three days in this place; and the wind becoming a little more favourable, we ſet ſail, and came within ſight of Wiſby, the capital of the iſland of Gothland. This iſland, which is the moſt fertile in all Sweden, was given as an appenage to Queen Chriſtina, who has exchanged it and that of Oëland for the city and lordſhip of Norkopin, in ————. There is a book of the laws of Wiſby, which is made uſe of to compile the regulations of naval commerce.

Fortune, which appeared only to be favourable to us, that we might feel more acutely our diſappointments, was not long in making us experience her uſual caprice: there aroſe during the night ſuch a dreadful tempeſt, that, after remaining a long time in continual terror, we were obliged, as ſoon as day-light appeared, to ſet ſail with all our canvas, to ſtop for ſafety once more in Sweden, at Weſterwick, in the province of Smaland. In this place, we ſaw two objects deſerving of pity; the firſt was, the general deſtruction of the city, which the Danes had burned in the late wars, and which was ſtill full of deſolation: they were now beginning to rebuild it: The other was more recent, and made us reflect ſtill more upon the danger we had been expoſed to; we ſaw the ſad remains of an Engliſh veſſel, loaded with ſalt, which had been wrecked, and the crew of which had been with conſiderable difficulty ſaved.

We remained in this wretched place ſix days, during which the wind prevented us from leaving it; I went every day, for ſome hours to the ſteep rocks, where the height of the precipices and the view of the ſea, accorded very well with my reveries. I have written ſome of them in my journey to Sweden. At length we ſailed; but our favourable weather continued no longer, than was neceſſary to carry us out to the open ſea, and to put it out of our power to go to any place for ſhelter. The tempeſt became now ſo violent, that our captain, one of the moſt ignorant that ever was at ſea, had fifty times a deſire to ſuffer himſelf to be wrecked upon ſome bank of ſand.

We remained in continual apprehenſions during more than eight days, that a thick miſt prevented us from diſtinguiſhing day from night; and at length, we arrived within ſight of the light-houſe at Dantzic, where our captain came fooliſhly to anchor, and which he approached ſo near, that two hours afterwards, a dreadful north-weſt wind having ariſen, he gave us one of the moſt ſerious alarms that we ever had in our lives. He entered the cabin, in which we were aſleep, weeping and crying like one in deſpair, and aſſuring us of our approaching deſtruction, and that nothing but God could deliver us from the imminent danger in which we were placed. It is vexatious to awaken thoſe who ſleep ſoundly, to give them information of this kind; but it was to us ſtill more horrible, when having run upon deck, we beheld the ſea in fury, the noiſe of which together with that of the wind foreboded to us nothing but danger; but we were at the height of miſery, when, our cable breaking, we felt the veſſel, in a dreadfully dark night, ſtrike on a bank of ſand. No words can paint the wretchedneſs of a man who finds himſelf in this horrible ſituation; for my part, Sir, I remember nothing elſe, except, that during the whole remaining part of the night, I began more than five hundred *Pater Noſters*, and was never able to finiſh one.

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At length morning returned, the moſt delightful I ever ſaw; and having hung out our flag, to ſhew the danger we were in, they came from on ſhore in wherries to find us, and we were conducted into the city.

Dantzic is ſituated on the Baltic Sea, at the mouth of the Viſtula. The largeſt veſſels come into the ſtreets, which are cut into canals; the entrance to the harbour is defended by an excellent citadel, which they call Mund. This city is under the protection of the King of Poland; but however oſtentatiouſly theſe gentlemen may talk of their liberty, they have only the name of it, and their protector may, with juſtice, be conſidered their maſter. They loſt, four years ago, a number of their privileges, on account of the conduct of one Doctor Stoff, who was the author of a kind of a ſedition. The King viſited them, and that he might chaſtiſe the rebels, he fined them in large ſums of money. The burgo-maſters gave him a *Staroſtie*, called Poſchi, which was engaged for twenty thouſand ducats. The King alſo ordered, that all law ſuits reſpecting ſums above one thouſand livres, might be appealed to the court of Warſaw.

Dantzic is called *Gedanum* in Latin; and the German word is dervived from the verb *dantzen*, which ſignifies, to dance. The origin of this etymology is the following, a number of peaſants generally aſſembled on the ſpot where it is built, and intending to build a town, they applied to the biſhop whoſe property the ground was, for leave to build houſes upon it, who gave them as much ground as they could encircle whilſt holding each other by the hand, and making a round in the form of a dance.

Dantzic pays about ſixty thouſand crowns to the King of Poland. There are commiſſaries appointed at the gates for the purpoſe of dividing the cuſtoms. The government of the city is divided into three parts. The firſt diviſion conſiſts of four burgo-maſters, who are taken from the patrician families, and of thirteen councillors. The burgo-maſters preſide one year each, after one another, and are, as well as the councillors, appointed for life: the ſecond diviſion conſiſts of twenty-four inferior magiſtrates; and the third, of a hundred men.

The principal trade of this city is in corn, which comes down the Viſtula from Poland, and in wax, ſteel, and amber, which is collected on the ſea-ſhore from this place to Memel. It is true, that this fiſhery belongs to the Marquis of Brandenburg, who farms it out for more than ſixty thouſand crowns. When the wind is high, then is the fiſhery moſt productive; and at this time alſo, the guards and the farmers diſcourſe together, and ramble on the ſhore with more exactneſs; and they are ſtrictly prohibited, under pain of death, from purloining the ſmalleſt quantity. It is ſoft before it has been expoſed to the atmoſphere, and will take the impreſſion of a ſeal; there are many pieces found with flies in them. I was aſtoniſhed, when I was told, what a great traffic is carried on in this ſingle article; and as I make little uſe of it myſelf, I believe that others conſumed no more than me; but I learnt at the ſame time, that the chief trade of the Dutch to India conſiſts of amber, where they conſume it greedily. A great Indian lord will ſometimes burn at one grand feaſt, more than twenty thouſand crowns' worth of amber; and the odour of it is not only agreeable to the ſmell, but is alſo very medicinal, and uſeful in curing pains of the head.

Their traffic alſo conſiſts of aſhes, honey, and litharge.

The fortifications of the city are very well kept in repair, and equally ſerve to adorn and defend it. The gate called *Hædor* is a piece of excellent architecture; and I have never ſeen any thing better proportioned. We obſerved in the city very ſpacious ſtreets, which are, however, diſfigured by the large balconies which occupy the half of them. There is in the middle of the great ſquare, a fountain which repreſents Neptune, in bronze. The houſes are very handſome, and well furniſhed.

The arſenal is very large, and adorned with ſeveral beautiful pieces of cannon, but the great church is a ſtructure equally beautiful on account of the height of the roof, and the elegance of the carpenters' work. There is in this church a certain hole, into which the Lutherans threw all the ſaints and all the ornaments that they found in the Catholic church; and, on this account, they call the place hell.

The Catholics have three or four churches, the ſervices of which are performed by Jeſuits, Jacobins, Carmelites, and decayed Carmelites; and I was never more ſurpriſed, than when I firſt attended maſs: when the prieſt was on the point of raiſing the hoſt, I was rather informed of the action which he intended to perform by the noiſe of the ſtrokes which his aſſiſtants gave themſelves, than from the noiſe of the little bell, which it was impoſſible to hear. Few men are ſo religious in appearance, as the Poles; they are very ſtrict obſervers of the faſts ordained by the church. They eat no butter on meager days, but only linſeed oil. They can take no fleſh on Fridays; and there would be danger of eating it in Maſſovia; and a Pole would believe he performed a meritorious action, if he killed a man in that ſtate.

What is alſo remarkable at Dantzic is, the mill with thirty wheels, which produces a ducat to the city every hour. There is in the great church a remarkable picture of a Flemiſh painter, who on his way to Rome, was taken by Corſair Turks, and afterwards retaken by the Chriſtians: his name was John of Chêne, from Antwerp. He has ſo well repreſented the laſt judgment, that nothing more excellent can be conceived. I have never ſeen ſuch a finiſhed performance; although it is certain, that juſtice of deſign is not to be found throughout every part: it is ſaid that an elector of Brandenburg offered fifty thouſand crowns for it. We aſcended to the top of a ſpire, from whence we commanded a view of the whole city, and of the ſea, which is half a league diſtant from it. It is nearly of the ſame ſize with Orleans; but there the houſes are more crowded together, and there are alſo a much greater number of inhabitants.

As for the ladies, it is neceſſary to give them their due. I have never ſeen in any country, a greater number of beauties; they are all very fair, and are extremely agreeable. The wives of Meſſrs. Mathias are extremely handſome, and eſpecially the youngeſt, who might paſs for a perfect beauty.

We obſerved the Poliſh dance, which is peculiar. The ſervants march before, and the maſters follow; they do ſcarcely any thing elſe, but march.

There are oxen in this country of a prodigious ſize; they are brought from Podolia, which belongs to the Turks or from the Ukraine, the beſt part of which belongs to them alſo. This province of the Ukraine is inhabited by the Coſſacks. The ſoil is ſo good, that it is ſufficient to ſow ſeed in it, once in three or four years; that which falls from the ſickle in cutting is ſufficient to ſow the crop; and thoſe who wiſh to ſow them a ſecond time, gather in the ſame manner. There are few finer countries.

We underſtood at Dantzic, that M. de Bethune was very much eſteemed by the Poles, and extremely generous. At the election of the preſent King of Poland, not one general of Lithuania oppoſed his coronation; but the reſt wiſhed for the Prince of Lorraine, or that of Neubourg. The Prince of Lorraine married a Princeſs Mary, Dowager Queen of Poland; but he was not ſupported by France.

The king, Michael Coribut Weſnowiſchy was choſen king, as if it had proceeded from the vexation of thoſe, who could not agree before the election. He received a penſion of five thouſand livres from the queen for his ſubſiſtence. He died very opportunely; for the Poles were deliberating about his depoſition. His funeral obſequies were performed at the ſame time with thoſe of King Caſſimir, who died at Paris.

The Prince of Condé has ſeveral times in the diets been propoſed as king; but the Poles are too much afraid of him: they are extremely apprehenſive, that he would be deſirous of encroaching on the liberties of Poland, of which they are extremely jealous. Count St. Paul died two days too ſoon, and was deprived of the pleaſure of ſeeing himſelf king. He had been choſen by common conſent; but heaven ordained otherwiſe. The Poles made ſome ſcruples about crowning the queen, becauſe the dowager was ſtill alive, and wiſhed to relieve the ſtate, which was unable to ſupport two queens; but the King had taken his meaſures with ſuch prudence, that ſhe was crowned a ſhort time after him.

The *ſtaroſties* are the governments of a province; the King gives them to the gentlemen, and cannot deprive them of them.

The cities ſend deputies to the diets, which the King aſſembles when he pleaſes; and the moſt inſignificant of theſe gentlemen, or of theſe envoys, can put an end to a diet; for there is a law in Poland, by which it is enacted, that their affairs muſt be decided *non pluralitate* votorum, ſed nemine contradicente, 'not by a plurality of voices, but 'by unanimous conſent.'

The *wayvodes* or palatinates are larger than the *ſtaroſties*; they are ſub-divided into *ſtaroſties*.

The palatinate of M. Vaubrenic, called *Boncoſci*, was injured by a Poliſh gentleman, who abandoned it, and was received and brought to France by him. Madame, the Marchioneſs of Breſſoi, his aunt, was expelled from the court, and obliged to leave the city by the intrigues of the queen, who dreaded the King's engagements, and felt ſome pangs of jealouſy. The ſtory adds, that it was Seinkamer, called the *Wolget*.

We ſaw, on the day of our departure, the great Hevelius, profeſſor of aſtronomy, one of the learned men of the age, who received penſions from a number of princes, and particularly, from his Moſt Chriſtian Majeſty. This man ſhewed us all the works which the fire had ſpared. He related to us, with tears in his eyes, the loſs he had ſuſtained by a dreadful fire which had happened two years ago, had conſumed more than forty houſes, and which unfortunately had begun with his.

This great man has continued to labour night and day, for nearly fifty years. At night he is employed in obſerving the ſtars from the top of his houſe, with glaſſes more than a hundred and eighty feet in length; and during the day, he reduces to writing, what he had obſerved the preceding night. Among ſeveral other learned ſubjects on which he entertained us, we learnt, that he was of the ſame opinion with Copernicus; and he told us, that it was perfectly abſurd to believe, that the heavens turned round the earth, and he ſupported his aſſertion by ſeveral demonſtrations, by which we were convinced; he ſhewed us on this ſubject, a terreſtrial and celeſtial globe, which proved in a ſurpriſing manner, that which he told us; he mentioned as one of his ſtrongeſt reaſons, that he always remarked at one time, the ſame diſtance betwixt the earth and the fixed ſtars, which are attached as well as the ſun to the firmament, and that at another, he found that it was much more diſtant from them: which convinced him, that the motion was in the earth, and not in the heavens; and on this ſubject, we, having told him, that this opinion was condemned among us as heretical, he told us that Father ——— confeſſor of his holineſs had written to him on this ſubject, and pointed out to him, that the church condemned this opinion, till it was proved, but, ſo ſoon as any had one demonſtrated it to be true beyond a doubt, he would then find no difficulty in adopting the more probable opinion. In the obſervation which he made at firſt upon this motion of the earth, and upon this nearneſs and diſtance from the ſtars, he thought he had been miſtaken, as he told us, in his calculation: but having, during

a lapſe of fifty ſucceſſive years, made the ſame obſervation, he had now no doubt of the truth of his opinion.

He alſo told us, that he had diſcovered the libration of the moon, which no perſon before him had been acquainted with, and the knowledge of which had been of great uſe to him in all his works, the number of which exceeds all belief. He has dedicated them to almoſt every prince in the world, and the volumes are full of plates made with his own hand: he ſhewed us them all, beſides fifteen large volumes, as thick as the lives of the Saints, full of letters which the moſt learned men of the whole world had written to him on various ſubjects.

The moon is a round body, full of depreſſions and elevations. He has drawn a chart of it ſeveral times, and has given particular names to the mountains and remarkable places which he has obſerved; not that there is any water in the moon, but a certain kind of matter, which has the ſame appearance with water. He is at preſent conſtructing a globe of a ſpherical form, in which he intends to ſhew all the ſcientific diſcoveries which have been during more than fifty years: he is aſſiſted by the king, to whom he intends to dedicate his performance. He ſhewed us the moſt beautiful geometrical inſtruments that I have ever ſeen, and a piece of amber, on which, as ſoon as it was drawn from the ſea, he imprinted himſelf the impreſſion of a ſeal, whilſt it was ſtill ſufficiently ſoft to receive it: for the moment it has been expoſed to the air it becomes hard, as we obſerve it.

The Marquis of Brandenburg has made a preſent to the Emperor of a chair of amber, which is ſaid to be the greateſt curioſity in the world: and to the Dauphin, a mirror of it, which is conſidered a maſter-piece. This prince is certainly the moſt powerful of all Germany; his territory is more than two hundred miles in extent; and the province of Pruſſia alone, of which he has only a part, produces of revenue to him, more than twenty-ſix thouſand crowns a-month. He gave a feaſt this laſt ſummer, when he was at Pyrmont, in which he expended, according to report, fifty thouſand crowns: there were preſent forty royal perſons, that is to ſay, deſcended of royal families or of ſovereigns. The two Queens of Denmark and Prince George were preſent. His court is more ſplendid than any other in Germany, and if he be deſtitute of the rank of a king, he is not deſtitute of the heart, the court, and the revenues of one.

The Elector of Brandenburg is called Frederic-William, Great Chamberlain of the empire, and has married Louiſa Henrietta, daughter of Frederic Henry, Prince of Orange. He has a ſon about fifteen years old, called *the Court-Prince*, he is of the Calviniſtic religion. We lodged at Dantzic, with Payen, in the *Schyber Gulden Haus*. We knew there M. Macé, watchmaker, who had reſided long in Conſtantinople, and who purchaſed his wife there, who is from Dantzic; the ſtory is very intereſting. This Pole is called ——— and his brother is now agent at the Conſtantinopolitan court, where he himſelf had been with his father, who was ambaſſador.

We kept up a correſpondence with the Tranſylvanian Michael Apaffei, whom France bribed largely to grant a paſſage through his territories to ſixty thouſand Frenchmen, and an equal number of Tartars, whom we kept in pay during the late wars, and who neceſſarily diverted the attention of the Emperor. The Duke of Tranſylvania is choſen by the ſtates of the country, and is confirmed by the Grand Turk, to whom he pays tribute. He ſwears on his arrival at ſupreme power, to maintain in the country the free exerciſe of five religions, which are, the Roman Catholic, the Greek, the Lutheran, the Calviniſtic, and the Anabaptiſt. He receives tribute from the princes of Moldavia and Wallachia.

The late Prince of Tranſylvania was called Ragotſki, of the kingdom of Hungary; and his predeceſſor was Bethlem Cabor, who married Catherine of Brandenburg.

We ſet out from Dantzic for Warſaw on Wedneſday the twenty-ninth of October, in a little covered chariot which we hired for four-and-twenty crowns current money of the country, which amount to about twenty French livres. On our departure we paſſed through a very large ſuburb, a German mile in length, which is called Schotland. The road is very fine, the country very good, and the inns very wretched; but one does not obſerve this wretchedneſs, becauſe it is the cuſtom in Poland for travellers to carry every neceſſary along with them, even their beds; for in the inns nothing is to be found but what one carries. This cuſtom has its advantages and its diſadvantages: one diſadvantage is, that it becomes neceſſary for one to carry a great equipage; but it has this advantage, that one always has ſomething good to eat, and that one always ſleeps in one's own bed; which is undoubtedly a great convenience for a traveller, who is very happy at enjoying repoſe at night after the fatigues of the day: this conſideration alone is ſufficient to make one ſupport the toil of a journey.

The reaſon why nothing is to be met with in Poland is, that the gentlemen take every thing from the peaſant, and pay him moſt frequently with ſtripes. All the peaſants are born ſlaves; and ſo great is the power of the lords of the ſoil, that it extends even to the juriſdiction over life and death; and when a gentleman has killed one of his peaſants, he is acquitted by paying ————, which amounts to about ſeven francs of our money, and this ſum is employed to bury him.

The lands are not ſold according to their value, but the number of peaſants which are upon them: they are obliged to work five days in the week for their maſter, and the ſixth for themſelves and their families, who are more wretched than it is poſſible to expreſs. It frequently happens that the lords, having need of money, ſell to their ſlaves their liberty for a certain ſum of money; but without this they are not permitted to remove their habitations: and a peaſant who ſhould be found in flight, would undoubtedly be maſſacred by his maſter. This dominion extends over the women as well as the men, and even ſomewhat further; and if the peaſant has a handſome daughter, the gentleman does not fail to take the privilege of the lord of the ſoil.

We paſſed through Graudentz, a city ſituated on the Viſtula, which is a magazine of the grain which is carried down this river to Dantzic and Culm, where we attended maſs, in a very fine church, on Touſſaint's day; and we arrived at Thorn, a city finely ſituated, which for this reaſon is called *Die Schenſte*, the handſomeſt.

Thorn is a free city, under the protection of the King of Poland, like Dantzic, and it is the capital of Pruſſia-royal; it is almoſt in the middle of the diſtance betwixt Dantzic and Warſaw. The government is almoſt like that of Dantzic, except that the four burgomaſters are changed every year, fifteen days before Eaſter, on the Sunday of *Judica*. Theſe four burgomaſters are elected; but the burgrave, who is the chief, is appointed by the King of Poland. We went to ſee the town-houſe, which is very magnificent; and in the magiſtrates' hall are portraits of the kings of Poland, from Caſimir the Fourth, who reigned forty-five years. To him ſucceeded John Albertus, who ſat on the throne eight years; and was followed by Alexander, who reigned five years; and after him Sigiſmond the Firſt remained on the throne forty-one years: Sigiſmond Auguſtus was next elected, who remained king four-and-twenty years; but his ſucceſſor, Henry the Third, who was afterwards King of France, reigned only three months. This prince received two crowns, and had for his motto, *Manet ultima cœlo*; but others changed *cœlo* to *clauſtro*. After him came Stephen, who reigned ſix years; and Sigiſmond the Third, King of Sweden and Poland, ſucceeded him. The former kingdom

was

was ſnatched from him by Charles the Ninth, his uncle, whilſt he was in Poland. This prince was choſen King of Sweden, and engaged at his election to live every fifth year at Stockholm; but being unable to keep his promiſe, on account of the continual wars in which he was engaged with the Turks, the Tartars, and the Muſcovites, he determined to ſend them a ſenate, compoſed of forty Jeſuits, who ſhould repreſent his court: this ſenate was received at Dantzic with great magnificence, and embarked for Stockholm; but intelligence of their departure being received at Stockholm, the council aſſembled, in which Charles, the King's uncle, preſided, who diſſuaded the Swedes from receiving a government of prieſts; and the veſſel containing them having arrived in the road, he went in a twenty-gun veſſel, under pretence of receiving them; and having given a ſalute rather too rough to the veſſel containing the holy brotherhood, he drove it to the bottom, without attempting to ſave any Jeſuit, whom he jeered in crying to them, *Perform now your miracles, as in Japan, when you walked on the water!*

Sigiſmond in this manner loſt his crown of Sweden, which his uncle acquired; who knowing well that there was no better means of exciting a war than under the pretext of religion, he expelled all the Roman Catholic prieſts, and eſtabliſhed the Lutherans in their ſtead. He was engaged in a war with his nephew, in 1604, which continued two years; but the King of Poland was unable to undertake any attempt of conſequence, from the attention which it became neceſſary to pay to the Tartars, who preſſed him ſtrongly on the other ſide.

This did not prevent the Kings of Poland, after Sigiſmond the Third, from taking the title of Kings of Sweden, until the time of John Caſimir, at the laſt pacification, which took place at Oliva, near Dantzic; where it was ordained that John Caſimir, being the laſt of his family, ſhould condeſcend to enjoy this title only during his life-time, in his intercourſe with all the princes of the world who ſhould give him this title, except the Swedes.

Sigiſmond had two ſons, both of whom ſucceeded to the throne: the eldeſt was Uladiſlas the Fourth, who reigned fifteen years. It was during this reign that the celebrated entry of the Poles into Paris, to demand the Princeſs Mary for their queen, took place. Uladiſlas being dead, his brother Caſimir was choſen in his ſtead, who married his brother's widow, and reigned ſixteen years, at the end of which he reſigned the crown, and retired to paſs the remainder of his days in France, where he died. To him ſucceeded Michael Coribet Weſnowitchy: this prince was too good; and his nobles deſpiſed him to ſuch a degree, that they put it into his head to retire into a convent, which he would have done if death had not prevented him. The Queen agreed to it, becauſe ſhe was to have been married to Count St. Paul, whom the majority wiſhed to raiſe to the throne. It was under him that Sobieſki, who at that time was only grand marſhal, gained the famous battle of Cochin, in the Ukraine, between the Nieſter and the Pruth. The Turks were encamped and well entrenched under a fortreſs; and the Poles, being about eighty thouſand men ſtrong, having paſſed the Nieſter on Sunday, encamped the following days almoſt within ſight of the Turks. Thurſday and Friday were ſpent in making ſome ſkirmiſhes, and on the evening of this day the Poles charged the enemy. This attack continued the whole night, and on Saturday morning the defeat commenced, and continued only two hours, during which more than eight-and-thirty thouſand Turks were killed, without giving quarter to a ſingle individual. Huſſain Pacha, who commanded the Turkiſh army, with great difficulty ſaved himſelf with two thouſand men, who alone remained of the whole army, which amounted to more than forty thouſand men, and which by flight avoided the fate of their companions. The booty was great, and it was wholly given up to the ſoldiers, except the tent of

Huſſain,

Huſſain, which was carefully preſerved and ſent as a preſent to the King. Nothing could be more ſuperb than this tent: it had more the appearance of a city than a pavilion of war, and all the officers were lodged in it. Huſſain Pacha repaſſed the river with near ſix thouſand men; but the bridge fell when the whole army was upon it, and more than four thouſand men were drowned, without any relief to thoſe who experienced the cruelty of the waves, except that of being cut to pieces by their enemies.

The King Michael received this intelligence with great joy, and this cauſed his death, which happened eight days after. There were great factions after his death, as always happens in Poland on ſimilar occaſions. Sobieſki was then grand marſhal, and general in chief, and he made the whole army ſwear before he left them that they would give their votes for the Prince, although at that time he was not beloved by the leſſer nobles. M. de Beauvais was ſent from France; and whether it was not the intereſt of France that the Prince ſhould become King, or that he found too many obſtacles among the nobility, he made before the aſſembled ſenate one of the fineſt ſpeeches ever delivered, telling the republic that both in gratitude for paſt ſervices, and in the hope of thoſe which might in future be received, no election could be ſo favourable to the public good as that of Sobieſki, who in conſequence was choſen King, and afterwards crowned at Crackow, under the name of John the Third.

The dowager of King Michael has ſince been married to the Prince of Lorraine, who has more influence than any other at the court of Poland, if the intrigues of France had been leſs powerful, and if it had not been wholly her intereſt to prevent this Prince from arriving at the throne, ſince by this new acquiſition of power he might have been enabled to undertake ſome enterpriſe againſt France, for the recovery of his duchy.

Although Poland be united to France by friendſhip, without having much intercourſe with her, it is more her intereſt to remain on good terms with the Emperor, whoſe growing ſtrength in Hungary is alarming. It was made apparent two years ago that the Poles were not ignorant of this maxim, when M. de Bethune was at that court for the purpoſe of fomenting the rebellion of the Coſſacks, both by means of men and money. The Queen ordered the recruits which M. de Bethune was ſending off to the rebels to be arreſted near the Hungarian mountains, by the Palatine of Ruſſia, by which ſhe evinced that Poland had no concern with what paſſed in that quarter, and that the whole proceeding originated with the court of France, which for want of money allowed the troops commanded by M. de Guenegaut to be diſbanded. Theſe troops were compoſed of ſome Frenchmen, Tartars, but the greateſt part were rebels, who finding that it had been more than two years ſince they had received any pay, they mutinied againſt their generals, whom they attacked and arreſted priſoners in a village, where they wiſhed to maſſacre them.

This conduct of the Palatine of Ruſſia, ordered by the Queen, produced a great alteration in the mind of M. de Bethune, who was a conſiderable time without attending the court, which was alſo the caſe with Madame the Marchioneſs, who could not remain on good terms with the Queen. M. de Bethune did not wiſh well the more for this action to the Palatine of Ruſſia, under-general of the crown, and in ſome degree put him at defiance, by telling him if they were each of them at the head of five hundred horſe, it would be ſeen who was ſuperior: however they afterwards became friends, and the Palatine afterwards made a preſent of a fine Turkiſh horſe to M. de Bethune.

M. de Bethune was extremely popular in Poland: no man ever ſuſtained his character better in that country than him; he always kept open table, and had more than a hundred perſons in his houſe: he lodged at the Caſſimerian palace, built by the Princeſs Mary.

Three

The diets are held once in three years; two are held in Warſaw, and one at Grodno, or Wilna, the two moſt reſpectable cities of Lithuania. This province has the ſame officers with Poland, and General Spas is commander-in-chief in Lithuania. It is ſaid in the country that it might ſo happen that the Lithuanians might chuſe a King; they ſee themſelves deſpiſed by the Poles, and even by the King, who has not the ſame regard for them as for his other ſubjects: it is feared that they may put themſelves under the protection of Muſcovy. They cry out for war in every diet; but they, as well as the Poles, are in no condition to carry it on.

When war is declared, you ſee all the little gentry on horſeback attending the army: they remain as long as their proviſions laſt, which conſiſt of a great number of little cheeſes, hard as wood, a kitt of butter, and ſomething elſe of that nature; and when this is conſumed, and they have eaten the price of their horſes, they return home, and are thus in a very poor ſtate for continuing the war.

The laſt diet was held laſt year, and was broken up by a little gentleman, who was of a different opinion from the reſt. It was at that time that the affair reſpecting the ambaſſadors took place, who returning from the caſtle were inſulted by ſome Poles, who had endeavoured to ſeize the ſword of a page: he drew his ſword; but ſome gentlemen having alighted from their chariots, among others the Marquis of Janſon, the whole was appeaſed. The Poles departed for aſſiſtance, and returned with nearly three hundred perſons, to fall once more upon the attendants of the ambaſſadors, with hazel-ſticks and cudgels, crying, *Zabi, zabi, franſleute*; *tue, tue*. The attendants alighted from the chariot, and went in to the reſidence of the Palatine of Ruſſia, where they defended themſelves as well as they were able againſt this multitude, whom the preſence of the ambaſſadors was unable to overawe, and which could not prevent ſeveral gentlemen from being wounded, and ſome remained apparently dead on the ſpot.

The King came next morning *incognito* to the ambaſſadors, who lodged at the Holy Croſs with the fathers of the miſſion, to ſettle matters: the Palatine of Ruſſia came thither alſo, and offered to put all his people into the hands of the ambaſſadors, to treat them as they thought proper. Envoys are ſent from all parts to theſe diets: ſome were there from Perſia, Turkey, and Muſcovy. The Muſcovite was conducted in the chariot of the Grand Marſhal, drawn by the King's horſes. The Turk was there on account of the limits which he had eſtabliſhed with near thirty thouſand men ſeven league from Leopold, according to his inclination, for they were in no condition to conteſt with him. This gave great vexation to many individuals who had property in that quarter, who however received promiſes of being otherwiſe recompenſed. This is a pretty good way of eſtabliſhing boundaries at the head of an army.

The firſt office belonging to the crown is that of General, which is poſſeſſed by Prince Nitre, nephew of the King, although older.

The ſecond is that of Grand Marſhal, poſſeſſed by Lubomirſky.

The Palatine of Ruſſia is Under-General.

The Chevalier Lubomirſky is Grand Enſign, and M. de Morſtain is Great Treaſurer of the kingdom, without being obliged to give any account; he is immenſely rich, although it is not yet eight years ſince his circumſtances were very ſtraightened.

All theſe offices are ſold by the poſſeſſors of them; but if they happen to become vacant by death, the King diſpoſes of them.

The archbiſhop of Gneſne, who is at preſent ———, is Primate and firſt Prince of the kingdom, born a legate, and governs the whole country during the interregnum, which continues a year. The money is marked with his image.

There is almoſt no other kingdom in Europe, except Poland, which is elective. The King

King propoſed at the laſt diet that they ſhould recogniſe his ſon as his ſucceſſor; but the Poles ſaid that they could only recogniſe him as ſon of the Grand Marſhal, his father filling that office when he was born. The troops are raiſed and paid at the expence of the republic, which ſupports only five or ſix thouſand men, for the purpoſe of protecting the frontiers from the incurſions of the Tartars. They have ſome regiments of huſſars, who are men armed in a very particular manner. To equip one of theſe huſſars coſts more than two thouſand livres: they have large horſes, and carry a tiger's ſkin upon their ſhoulders, a quiver and arrows behind their back, a coat of mail upon their head, a ſabre, piſtols, and a cutlaſs. The ſervants of theſe men precede the ſquadron on horſeback, with a lance in their hand; and it is very ſingular that theſe people have wings fixed to their backs: they ruſh occaſionally into the midſt of their enemies, and frighten their horſes, who are unaccuſtomed to theſe viſions, and make way for their maſters, who cloſely follow them. The republic has alſo ſome Tartars whom it ſupports in time of peace, who are like the Swiſs, willing to hire themſelves out to thoſe who will pay them: theſe are in other reſpects the worſt troops in the world: they ſhewed clearly that their horſes were better than themſelves, when obſerving the Swedes paſſing the Viſtula, they choſe rather to avoid than to await them, and left King Caſimir, who had only leiſure to help the Queen into her chariot, and who ſaw from his reſidence the Swedes paſs the river, and enter into Warſaw; and, on the other hand, obſerved the Poles and the Tartars flying ſwifter than the wind. They ravaged the whole city, conducted by Guſtavus Charles, father of the preſent King, who gave a wiſhed-for permiſſion to his ſoldiers to carry away the beautiful column at the entrance of the gate of Warſaw, provided they removed it without breaking it.

In the laſt diet it was reſolved that no candles ſhould be lighted there, to prevent thoſe who ſlept from being ſeen; for it often happens that as the Poles go to the diet at three or four o'clock, after dinner, when they have drank too freely, others took the opportunity of paſſing ſome reſolutions, while they knew thoſe who were of an oppoſite opinion were aſleep, and which conſequently paſſed unanimouſly: it is on this account that they have been anxious to baniſh light from their aſſembly, that the confuſion in it may be increaſed, if indeed it could be greater, and that thoſe who ſlept might not be obſerved.

Warſaw is in Mazovia, the capital of Upper Poland, and is the place where the diets are held every three years. This city is ſituated upon the Viſtula, which comes from Cracow, and on which a great quantity of commodities are conveyed from Hungary, and chiefly wine, the moſt excellent which can poſſibly be drunk. It contains nothing worthy of obſervation, except the ſtatue of Sigiſmond the Third, erected by his ſon Uladiſlas, which is placed at the entrance of the gate on a pillar of jaſper, at which the Swedes fired ſeveral cannon; the gilding of the figure is deeper than the thickneſs of a ducat. The city is very dirty and very ſmall, and, properly ſpeaking, conſiſts ſolely of the great ſquare, in the middle of which the town-houſe is ſituated, and around it there are numbers of ſhops kept by Armenians, very richly furniſhed with ſtuffs and merchandiſe, in the Turkiſh manner, ſuch as bows, arrows, quivers, ſabres, carpets, knives, and others: here they have a great number of churches and convents. We ſaw the Caſſimerian palace, built by the late queen, which is at preſent ſo much neglected, that every part of it is falling to decay: we ſaw there ſeveral of thoſe chairs by means of which they aſcend and deſcend from one chamber to another. It was from this palace that the queen beheld the Swedes paſs over the river, which waſhes the feet of the walls; and it was here where M. Bethune dwelt.

We went to pay a viſit to M. Lubomirſky, grand Marſhal, who is one of the richeſt

princes of Poland. His father was generaliſſimo, and entertained great jealouſy of Potoſky, another general: however they became friends in conſequence of the marriage which Lubomirſky brought about betwixt his ſon and Potoſky's daughter: ſhe is dead, and this prince has ſince married the daughter of the great chamberlain. Lubomirſky, his father, took up arms againſt his king, and defeated his troops ſeveral times: he was accuſed of favouring Auſtria in the approaching election, and of aſſiſting the great party of the confederation.

This nobleman ſhewed us his whole houſe with great condeſcenſion: he purchaſed it five or ſix years ago, and had an excellent bargain of it; it is called Jeſdoua, and is only about a cannon-ſhot diſtant from the city. This prince is conſtantly building in his garden hermitages and baths, which are very beautiful. His palace is full of a great number of very beautiful originals, which he has collected at a great expence. His gallery is very curious: he ſhewed us a large piece of mechaniſm, which he had received from the neighbourhood of Augſburg, which contained a clock, a chime of bells, a perpetual motion, and a number of other things; the whole was made in the form of a large cabinet of ſilver.

He ſhewed us the ſpot on which his grandfather had gained the battle over the Turks at Choczim, where Oſman was preſent, and where ſeveral thouſand of the enemy were left on the field of battle. This place is favourable to the Poles; they have gained two ſignal victories on it, and eſpecially the laſt, which tended not a little to the peace which ſucceeded.

We went to the caſtle, which contains nothing beautiful, except the chambers of the ſenate, and that of marble, where the taking of Smolenſko by the Poles from the Muſcovites is painted, and where they killed great numbers, and took two ſons of the Grand Duke priſoners, whom they brought to Warſaw, where they died; and a chapel was built for them, which is ſtill called the Chapel of the Muſcovites, and is ſituated before the place where we lodged. There is in the caſtle ſome very fine tapeſtry, wrought with gold, which was brought from France by King Henry; a part of it was pledged to the inhabitants of Dantzic by Caſimir, to induce them to relieve the neceſſities of the ſtate.

The palace of M. Morſtain, grand-treaſurer of the kingdom, is the moſt magnificent of all, both with regard to the fine effect of the ſtructure, and the richneſs of the furniture with which it is adorned. This nobleman received us with all poſſible affability; he ſhewed us all the apartments of his palace, and a number of pictures in his gallery. We ſaluted the treaſurer's lady, who is a native of Scotland, whom we met with at General Bearn's, who ſerved in the French army in Hungary. M. Morſtain has purchaſed from the Marquis de Vitri the territory of Montrogue in France. He pretends that his ſon, who is called M. de Chateau-Villain, and whom the queen in deriſion denominates Little-Villain, will remain in France and poſſeſs all his property there; and what remains in Poland is to be the property of his grand-daughter, who is now marriageable. He requeſted us to take a repaſt with him.

The houſe of the Palatine of Lublin is alſo to be ſeen.

General Spas is chief general of Lithuania: he made a ſtrenuous oppoſition to the election of Sobieſky; but it was carried by means of money.

It is prohibited under ſevere penalties to draw a ſword during the diets, and to fight any where in Poland within three leagues of the King and the grand Marſhal.

M. de Beauvais only propoſed in his harangue the Prince of Neubourg to be elected, and did not give himſelf much concern who was King, provided it was not the Prince of Lorraine. The election of the King takes place in the country, where they erect a wooden ſtructure. A circumſtance took place at the coronation of the preſent King,

which never happened before, and which will probably never happen again, which was that the King followed the bodies of two others, King Michael and King Caſimir, to the grave. The coronation takes place at Cracow.

King Michael had a little ſoul: he took pleaſure only in procuring images and watches; and requeſting from the queen one day a watch, he told her he wiſhed to make buttons of it to his waiſtcoat. When he was elected, the queen ſettled a penſion on him of five thouſand livres; M. Seryeant lent him a third part of it.

The Poles are extremely proud, and plume themſelves highly upon their nobility, the greater part of whom are obliged to till the ground, ſo wretched is their condition. A petty nobleman wears his ſabre while proceeding to cultivate the ground, and lays it down beſide ſome tree; and if any one paſſing would refuſe him the appellation of *Mouche-Panier*, and ſimply call him *Panier*, which is equivalent to Mr., he would be treated very roughly.

In other reſpects they are very civil, and are always the firſt to put their hands to their hat: they are great obſervers of faſts, and practiſe more abſtinence than is demanded of them. Some Poles eat no fleſh on Monday and Wedneſday; on Friday almoſt nobody eats butter; and on Saturday they eat nothing boiled, but take that which has been roaſted. This devotion extends towards all the animals; and our valet having one Saturday given ſome fat to a dog, our hoſteſs wiſhed to puniſh him, thinking ſhe was performing a meritorious action.

The Poles lay out conſiderable ſums on their interments, and delay them a long while, from motives of magnificence. There are great lords who are not interred for five or ſix years after their death, and who are depoſited in heated chapels, which coſt large ſums. On the day of interment they cauſe armed men to enter, like the ancient chevaliers, who come, as if on horſeback, into the church, and run to break their lance at the foot of the coffin.

The houſe of the fathers of the miſſion, where the ambaſſadors lodge, is very large. They built a church, called Holy Croſs; but it remains there till ſome good man finiſh with his pence that which the fathers have begun. They were eſtabliſhed with the religious of Saint Mary by the late queen; they are very rich, and the biſhop of Cracow is at preſent eſtabliſhing them in his dioceſe: the ſuperior was not there, but we ſaw Father Mumaſan.

The rebels of Hungary have revolted, on account of religion, againſt the Emperor, who wiſhed to deprive them of liberty of conſcience.

Michael Apaffi is Prince of Tranſylvania: he ſwears, at his acceſſion to power, to maintain four religions in his ſtates. The greateſt pleaſure of this prince conſiſts in drinking, and whoever is able to do ſo is ſure to make his fortune in his ſervice. The capital of Tranſylvania is Cuiſvar.

The young prince, ſix or ſeven years old, is educated in the diſpoſition of his father, and carries always a bottle at his ſide, in the form of a bandoleer. M. Acakias was a long time the reſident in this country; at preſent it is M. du Verdet. The Chevalier de Bourges, who left it with M. Acakias, but who being ſick ſtopt at Leopold, aſſured us that he had, in a feaſt which he gave to the reſident, taken the hair of a ſlave, and having paſſed a ſtick acroſs, he took pleaſure, for the purpoſe of diverting the company, to make him ſwing during the whole repaſt: he afterwards obliged him to run quite naked eighteen leagues at the ſide of the chariot of the Princeſs Telechi; this is the wife of the miniſter of ſtate, through whoſe hands every thing paſſes. The Prince does not open even a ſingle letter, and thinks of nothing but drinking. This Telechi is the moſt barbarous man in the world: there are more irons in his houſe than in Marſeilles.

Telechi is the chief of the army, and ſupports the rebels. This Prince of Tranſylvania pays eighty thouſand crowns of tribute to the Grand Seignior: this year he has paid double tribute, becauſe ſome Turks had been killed on the territory of Tranſylvania.

Bethlem Gabor was the firſt who became tributary to the Porte; he paid ten falcons. His ſucceſſor Michael Baſons was obliged to pay ten thouſand crowns; and Ragotſki paid twenty; and the preſent Prince pays eighty thouſand.

We travelled from Javarow to Javarouf in ſix days; it is a diſtance of about forty leagues. Javarouf is the moſt abominable place, not only of Poland, but of the whole world. The court remained here this winter, on account of the pregnancy of the queen, who intended to ly-in at this place. The court ſtops but a ſhort time in one place: it travels conſtantly, and in the moſt agreeable manner imaginable; for the whole of Poland is the fineſt country for hunting I have ever ſeen, and this journey is a continued chace. We had the honour to ſalute the King, and to kiſs the hand of the Queen. This Prince received us with all that goodneſs which he ſhews to every one, and eſpecially to ſtrangers: he took great pleaſure in making us relate the particulars of our voyage to Lapland, and he never ceaſed to interrogate us reſpecting it. The Queen had equal curioſity, and wiſhed to be informed of every particular. This Princeſs is one of the moſt accompliſhed in Europe; ſhe is about thirty-eight years old, and nature has been pleaſed to impart to her a portion of all her gifts: ſhe is the fineſt perſon at court, the handſomeſt, and the moſt witty: it it only to ſee her that ſhe may be known; but one is the better perſuaded of her excellencies, when one has had the honour of converſing with her. It was ſhe who placed the crown on the King's head; and ambition, which is the noble failing of great ſouls, was enjoyed by this Princeſs in the higheſt degree. It was ſhe who incited the King to endeavour to aſcend the throne; and for this purpoſe ſhe ſpared neither money nor promiſes, and exerted herſelf ſo much that ſhe was at length ſucceſsful, notwithſtanding the great intrigues of the Prince of Lorrain. It is true that the arrival of M. de Bethune was of no little uſe; he arrived the night before the diet was to have been finiſhed, when it was intended to proclaim the Prince of Lorrain King the day after; he made ſuch uſe of the little time he had, and he managed the members of the diet ſo ſucceſsfully, that they prolonged it for ſome days, during which time he had leiſure to act with that ſucceſs which he met with.

The royal family is the moſt accompliſhed which can be any where met with. The eldeſt Prince is called Louis-Henry-Jacob; the King of France, the Queen of England, and his grandfather, were his god-fathers and god-mother. This Prince is in his fourteenth year, and promiſes every thing that can be expected from a great prince; he is handſome, dances well, and ſpeaks four languages as well as his own, the German, Latin, French, and Poliſh: to gratify the King, who knows theſe languages perfectly, he ſays, that he wiſhes to learn all the languages of Europe. The Princeſs, about ſix or ſeven years of age, is very handſome, and was crowned before ſhe was born. The Prince Alexander, ſix years old, is the moſt amiable prince that can be ſeen: there is alſo the Prince Amour, three or four years old. The Queen, who is at preſent pregnant, has had fourteen children, and is ſtill as freſh, and in as good health as a woman of twenty years of age. I had the honour of holding the game of the King at ombre, of playing with him, and to crown me with honour, of eating with him at his table, the ambaſſador being placed on his right, and I on his left. The maſter of the horſe was there with the ſtaroſtat of ———. We this day accompanied the King to the chace. Poland is a country wholly adapted for this amuſement: this is expreſſed by the word itſelf; for *Poln*, from whence the word is derived, ſignifies *level country* in the Sclavonian language. But the chace is not conducted here as in France: they make an enclo-

ſure

cloſure of nets, near which they place ſoldiers, who drive out the game at an opening which is left for that purpoſe: they ſend in a great number of dogs at this opening, accompanied by huntſmen on horſeback, to aſſiſt them, who drive out all the animals which it contains. Every one takes his poſt, two muſket-ſhot diſtant from each other, and when any animal appears, whether wolf, fox, roe-buck, &c. they let looſe ſuch a number of greyhounds, that the animal muſt be very fleet if it can eſcape. We were extremely ſucceſsful this day: in leſs than four hours we took more than ten roe-bucks, three wolves, five or ſix foxes, and a number of hares; but what rendered the hunt delightful and bloody, was a wild boar of the ſize of a horſe, who was killed after a long conteſt with the dogs: he killed ſome of them, mangled others, and wounded both men and horſes; but at length he was killed by the ſhot of a blunder-buſs: they carried him on a little cart to the King, and every body owned that they had never ſeen ſo furious an animal. It was neceſſary to procure a chariot for the removal of the mangled dogs, in the ſame manner as the wounded are removed after a battle.

We ſaw at the court M. de Vitri, ambaſſador extraordinary, who received us with particular kindneſs. During all the time we were at court, we had no other houſe and no other table than his. We ſaw at his houſe M. de Valalé, his equerry; M. Noblet, who departed for France the day after we arrived; Meſſ. Peliſſier and Devilles, ſecretaries; the Marquis of Arquien, to whom the Queen gives twenty thouſand livres a-year: this is the rendezvous of all the French for pleaſure and for play; the Count of Matigny his ſon, who is captain of dragoons, and to whom the Queen gives two thouſand crowns. We ſaw at the houſe of the Marquis of Arquien M. D'Alerac, M. de Valalé, &c.

The Queen has three French gentlemen, Meſſ. Ryon, Forges, and Villars, who was in the Swiſs regiment of Monſieur: he made a tour through France.

We knew at the court the maſter of the horſe, M. Jalonſky, vice-chancellor of the Queen, who is a man of genius; M. Sarinſki, King's ſecretary; M. Dalanty, an Italian, ſecretary of the King; and M. Dumont de l'Eſpine, valet-de-chambre.

In Poland it is a cuſtom to make preſents on feſtival-days. The Princeſs Radzivil is called Catharine; her fête took place while we were at the court: the Queen made her a preſent, and wiſhed that there ſhould be a dance at the court.

Theſe kinds of dances never terminate; and from the beginning to the end every one dances with his own partner without ſtopping.

They have a mode of dancing in the Ruſſian manner, which is very pleaſant: M. the Chevalier Lubomirſki, grand-enſign of the kingdom, dances it perfectly well.

They never dance more than at marriages, where the King is at all the expence during the ſix or ſeven days, in which the wife does not live with her huſband; and the day in which ſhe is put into his poſſeſſion he treats every body.

The Poles are proud, are extremely vain of their high rank, and lay out every thing to procure a fine horſe, an elegant dreſs, and a beautiful ſabre: they are handſome; but in this the women do not reſemble them; with difficulty could two be found at the court who were ſupportable. They gratify themſelves with a number of attendants; and the petty nobles, who have nothing to live on, attach themſelves to ſome of the richer.

The women almoſt never go abroad, and go to embrace their huſband's thigh when they return home: this is the moſt cuſtomary mode of ſalutation in Poland; and the women of quality are ſaluted in no other manner than by embracing their thigh. There are ſome whoſe embraces are a little too rough, and who are very willing to feel that which they embrace. Their dreſſes are very rich, and are wholly covered with gold and

and ſilver. Their dreſs conſiſts of a man's waiſtcoat unbuttoned, and a petticoat; they wear boots like men.

There is no country in the world more flat than Poland; we have travelled through almoſt the whole country without finding a ſingle mountain; whence the country being flat, there are few rivulets, as they are unable to flow, on which account, the water is very ſcarce; but, to make up for this deprivation, they make very good beer, particularly at Varca, which is renowned throughout the country as being the beſt. All theſe extenſive plains are ſown with corn, and it is exported to various parts of Europe.

There is no fortified place in Poland, except Leopold, which is ſituated on the Turkiſh frontier: ſtill, however, theſe are fortifications in the Poliſh manner, which the French would willingly deſtroy. It is by this means, they think, that they preſerve their liberty; and, having no place where they can intrench themſelves, they are obliged to make ramparts of their bodies. They are certain to beat the Turks, when they chooſe, as they have always done; but nevertheleſs, they do not ceaſe to loſe their country with them. The Tartars are the enemies whom they fear moſt: theſe men do not ſeek after glory; they only deſire booty, on which they live. Their troops are never placed in regular order; they fall ſuddenly on the enemy's camp and take every thing they can find; and at the firſt ſound of the drum, which the captain has fixed to the bow of his ſaddle, they retire and return a quarter of an hour afterwards to attack ſome other place; ſo that they are conſtantly on the alert; by which means they confound their enemies, and continually ſtop and moleſt them. They are, in fighting, particular in this reſpect, that they fight when flying, and ſhoot arrows from behind their heads, which are diſcharged upon their enemies. They make frequent incurſions into Poland, when the Poles do not pay them the ten thouſand *couſuques*, which they are obliged to furniſh them with every year, which are dreſſes made of ſheep's ſkins. The Tartars, when making their incurſions, travel thirty or forty leagues in one night, carrying with them a little ſack filled with ſtraw, attached to the head of their horſes, who do not ſtop, that they may eat it, and a piece of fleſh which becomes baked under the ſaddle; ſo that, their enemies, unappriſed of their approach, they take all that they can find in the country, men, women, and children, whom they afterwards carry by the Black Sea, to ſell at Conſtantinople. But they have this peculiarity, that they never attack fortified places; nor will forty thouſand Tartars attack a paltry village, provided it be only ſhut up with planks, becauſe they are afraid of ambuſcades, and they do not wiſh to fight regularly.

The Poles are anxious to procure the alliance of the Tartars, and make uſe of it, unleſs when at war with the Turks, for whom they always declare themſelves, as being Mahometans, and rendered tributaries to the Grand Seignior, in conſequence of which, if the Ottoman race became extinct, the Khan of the Tartars would ſucceed to the Empire.

King Caſimir had more than twenty thouſand of them, when the Swedes entered Poland, but they did not await the enemy, and as ſoon as they knew that they were only two leagues diſtant from them, they fled as if they had been at their heels.

The republic always maintains ſeven or eight thouſand regular troops on the frontiers, to prevent the incurſions of the Tartars. The King does not maintain theſe troops; he only pays the Heydukes, the Semelles, and the Janizaries. The firſt-mentioned are dreſſed in blue, with large buttons and plates of tin, and have bonnets made of felt upon their heads. They have firelocks, and the *bardiche*, which they ſay is a very good weapon. The Semelles are other ſoldiers all armed in the ſame manner; but all the Janizaries

Janizaries are Turks, dreſſed like thoſe whom I have ſeen in Turkey. A very curious circumſtance happened during the ſitting of the laſt diet. A Turkiſh company of the garriſon of Kaminiek, deſerted completely with its arms, colours, money-cheſt, and officers, and came to offer their ſervices to the king of Poland. The King behaved on this occaſion, in a manner that became a great Prince, and with his uſual intrepidity; for, notwithſtanding the ſolicitations of the Queen, and of all his council, who adviſed him not to take theſe men into his ſervice in the preſent conjuncture of affairs, as he had at that time, a Turkiſh ambaſſador at the Court, which made them ſuppoſe, what was not unlikely, that they were ſpies, (the event ſhewed, however, that he was better informed than them all,) he has them ſtill, and gives them double pay. But it is a very extraordinary thing, to ſee a whole company deſert with its officers.

The fineſt militia of Poland conſiſts of huſſars, Tavaches, and Panſars, who are all nobles. The armour of the huſſars is ſomewhat ſingular. The King has ſtill a company of about a hundred *reitres*, who accompany him on all occaſions.

We ſaw at Veroni, M. Acakias who returned from Tranſylvania, and gave us information reſpecting that country; he told us, that the people conſiſted of Tranſylvanians and Saxons; that the former were maſters, and the latter ſomewhat like ſlaves. The Saxons are people who came from Saxony, who are here treated like Jews although they are more men of property than the others. The Tranſylvanians travel without expending a halfpenny, as they live upon, and lodge with the Saxons. When the Tranſylvanian noblemen have caught ſome game, they ſend one of their ſervants to ſell it, and the maſters demand ſome game to eat; the poor Saxon is obliged to go and purchaſe from the ſervants of theſe maſters the game, and to pay them whatever they demand for it. Almoſt every perſon ſpeaks Latin in this country.

The Poliſh language is Sclavonian, like that of Muſcovy and Tartary; and there is as great a difference between theſe languages, though they are derived from the ſame ſource, as betwixt the Italian and Spaniſh, which are derived from the Latin. The living languages which are ſpoken in Europe, may be claſſed under two heads; for I am not ſpeaking of the dead languages, like the Greek, the Hebrew, and the Latin. The Arabic language is in Aſia what the Latin is in Europe; and with a knowledge of this language, one may paſs from the Boſphorus, to the moſt diſtant parts of India. There are therefore, only two mother-tongues, which have their dialects, and theſe are the Teutonian and the Sclavonian. The Sclavonian is familiar at Conſtantinople, and its principal dialects are the Ruſſian, ſpoken by the Muſcovites, the Dalmatian by the Tranſylvanians, and the Hungarians, the Bohemian and the Poliſh, and ſome others which are ſpoken among the Wallachians, Moldavians, and Leſſer Tartars.

The Teutonic has three principal dialects, the German, the Saxon, and the Daniſh; and from theſe proceed other idioms, as the Engliſh, the Swediſh, the Flemiſh, &c. The Greek language is dead, and leſs corrupted than the Latin; but it is ſtill ſpoken in the iſlands of the Archipelago, in Achaia, and in the Morea. There are alſo ſeveral other leſſer original languages which have very little extent, as the Albaneſe, in Epirus and Macedonia, the Bulgarian, in Servia, Boſnia, and Bulgaria; that of the Coſſacs, or Leſſer Tartars, on the banks of the Tanais; that of the Laplanders, and the Fins; that of the Iriſh; and the Biſcayan, and the Breton.

We left the court, after having taken leave of their majeſties on Friday, and were conducted by the Sieur de Valalé. We paſſed next day through Jeroſlans, which gives its name to a duchy, the half of which belongs to the Queen. We ſaw ſome little villages, which contain nothing remarkable. On our journey, we were attacked by three robbers; we were in our chariot, which on account of the wind, was ſhut up on all ſides:

ſides: they cried out to our coachman to ſtop, who had no inclination to obey them, and made a ſignal to us to prepare our piſtols; which we immediately did, and deſcended from the chariot with the piſtols in our hands, accompanied by our valet, who armed with a firelock, kept them in check. When they obſerved this arrangement, they ſtopt ſhort, and regarded us, without daring to approach. We continued our journey on foot, with our piſtols in our hands; and as it was late, we arrived a ſhort time after at the inn, where they ſent two of their companions, who came, like paſſengers, to obſerve the ſituation of our countenances. They ſaw, that we had our arms ready, and that we were on foot during the whole night. We did not know them to be what they really were; and as it was already late, we had been unable to remark them on account of the obſcurity. They ſet out two hours before day break, and we were arranging matters to ſet out, when the coachman told us, that he had ſeen them join four others in the neighbourhood of the houſe, and that they had entered the wood, which was about a hundred paces diſtant. We did not think it prudent to depart, till the return of day; and we were waiting till it ſhould be light, when we heard four carriages paſſing, containing two oxen each. We embraced this opportunity of paſſing through the wood; and as it was clear moon-light, we obliged all the drivers to take white ſticks in their hands, which appeared by the light of the moon, as if they had been muſkets. In this manner, we paſſed on, while they dared not attack us, although we heard them ruſtling on every ſide. At the firſt village we arrived at, the people informed us, that the wood was full of them, and that it was difficult to paſs it without being robbed.

We arrived at Cracow on Thurſday morning; we had ſome difficulty in procuring lodgings, for there was no tavern in the place. We found an Italian, who conducted us to his houſe. This man, like all his countrymen, immediately deafened us with his loud noiſe; he talked about nothing, but millions, his equipage, his horſes, and his chariot. We were not long in diſcovering, that the fellow was one of the greateſt ſcoundrels that ever lived. We were no ſooner ſeated at table, then he went to borrow three wooden ſpoons of his landlord, and told us, that he had given out his own which were ſilver, to be cleaned. We talked of going out after dinner, and having inquired, whether he had a ſword, he told us, that he had unfortunately fallen the day before, and that, in falling, he had broken it, and had conſequently given it to an armourer. In looking at our piſtols, he told us, that he had a pair which he had purchaſed at Amſterdam, which were double-barrelled, and which were at preſent in the hands of the armourer, that they might be cleaned. He told us, that he would take us in his chariot to ſee the mines; but when the time came, he ſaid his chariot was newly painted, and four of his horſes were lame. But what was moſt entertaining, was, that he was always proteſting, that he would take nothing for our lodging with him; and when it was neceſſary to go to market, he came to aſk a crown, ſaying, that he had given away all his caſh for letters of exchange on Meſſ. Peſſaloukl of Vienna. He ſaid, he had a law-ſuit reſpecting two houſes in the city worth ten thouſand francs, which had come to his poſſeſſion through his wife; and nevertheleſs, he wiſhed to return with us the following day, without any intention of ever coming back. And having aſked the reaſon why he would leave ſuch a fine property, and ſuch excellent expectations; "O" ſaid he, "that gives me no uneaſineſs; I ſhall ſettle all that buſineſs to-morrow; I ſhall "gain my law-ſuit; I ſhall ſell my houſes." We ſaw quite well his raſcally intentions, but we wiſhed to amuſe ourſelves with him to the end; and to puſh the raillery a little farther, I aſked him, if he would give me letters of exchange on Vienna, for money which I ſhould pay him. At this propoſition, joy began to ſparkle on the ſcoundrel's

 countenance;

countenance; he began to prepare the moſt excellent letters of exchange that were ever made by the moſt celebrated banker; but unfortunately neither ink nor paper were found in the houſe. I afterwards aſked to ſee his horſes; the ſcoundrel perceived that he was laughed at, and that he had to do with men as intelligent as himſelf. I never ſaw a man more confounded in my life, and we amuſed ourſelves with repeating his uſual phraſe, *Italiani non ſono miga crilloni;* and we ſaid *Franceſi*, inſtead of *Italiani*. We threw in his teeth an infinite number of his deceptions, lies, and contradictions; and we had the pleaſure of confounding the greateſt ſcoundrel in the world.

Cracow is the chief city of Upper Poland, and is infinitely more handſome, larger, and has more trade than Warſaw. It is ſituated on the Viſtula, which takes its riſe at no great diſtance. Its academy is much eſteemed: it was founded, about three hundred years ago, by Caſimir the Firſt, who aſked for profeſſors from the colleges of the Sorbonne at Paris, who were the cauſes of that great reputation which it acquired. The object moſt worthy of notice in Cracow, is the caſtle, ſituated on a little hill; it is very extenſive, but without form, or any regard to the rules of architecture; the chambers are ſpacious, and the cielings ſuperbly gilt; on which account, this reſidence might be fit for a king. In the church of the caſtle, the tombs of the kings are to be ſeen; and they never inter one King, till another has been elected. King Caſimir and King Michael were interred the ſame day that the preſent King was crowned; for they all come to be crowned at Cracow.

The body of Saint Staniſlas is in a ſhrine of ſilver, placed in the middle of the church and covered by a canopy. This ſaint, who was killed by one of the Kings of Poland, is the cauſe why the Poles go with their heads ſhaved, and eat no butter on Friday, and ſome of them on Saturday; this was impoſed on them as a penance, by one of the popes, during a hundred years; and this cuſtom became a law, for although the time of the penance had expired, they never ceaſe to obſerve this faſt, and the cuſtom of ſhaving the head.

There are few cities, I do not ſay in Poland, but in all Europe, where there are more churches, prieſts, and particularly monks, than in Cracow. They are as rich and as much reſpected here as in Italy; and this is the reaſon, why they are ſo numerous. With reſpect to the churches, to do them juſtice it muſt be confeſſed, that the Poles are extremely anxious about the beauty and the ſervice of their churches; the gold ſhines in them on all ſides; and one is aſtoniſhed to find a church gilt to the very vault, in a wretched village, where it has been impoſſible to procure a morſel of bread. The fineſt churches in Cracow are the Dome, dedicated to Saint Mary, which is in the middle of the ſquare, the Minims, and the Bernardins; the Jeſuits have a very beautiful one, lately built in the Italian manner. The great ſquare is very ſpacious, and the principal ſtreets branch out from it; chiefly the grand ſtreet, which leads to Caſimir, the reſidence of the Jews, who have in that place, their republic, their ſynagogue, and their court of juſtice. Theſe gentlemen are no better treated in Poland than in Italy and Turkey, where they are the dregs of the human race, and the ſponge which is preſſed from time to time, and chiefly when the ſtate is in danger. Although they were not diſtinguiſhed by any particular mark, as in Italy, by a yellow hat, in Germany by a dreſs, in Turkey by a turban, in Poland by a ruff, it would be impoſſible not to know them by their excommunicated air, and their haggard looks. However rich they may be, they are unable to leave off that villainous diſpoſition in which they were born, and which excites horror in thoſe who have ſeen them, chiefly in Poland, in the inns which they keep. Throughout the whole of Black Ruſſia, where there are thirty or forty of them in a little chamber, the children are naked as they were born, and the fathers and mothers are only half

covered. I do not believe there is any nation in the world more fruitful: one finds in the ſame box filled with ſtraw, and in the ſame cradle, four or five children of the ſame mother, who are ſo black and hideous, that they appear like little crows in a neſt.

The tribute which the Jews of Cracow pay to the republic amounts to twenty thouſand crowns; they give beſides this, three hundred ducats annually to the King, two hundred to the Queen, a hundred to the Prince, and a number of other leſſer expences to which they are daily ſubject. There are ſome cities in Germany, where they are not permitted to reſide; and when there buſineſs calls them to theſe places, they give one ducat for the firſt night they ſleep in the city, two for the ſecond, and three for the third.

This is alſo the caſe at Warſaw, where they are not permitted to reſide, except during the ſitting of the diets; but there is no kind of raſcality, which they do not practiſe; and when any one is found at another time, the ſcholars are let looſe upon them, and have a right over their perſons; ſo that, it is eaſy to imagine, what kind of treatment they will receive from theſe gentlemen.

We went to pay our reſpects to the Palatine of Cracow, the firſt of the kingdom, called Viclipoſky, grand chancellor of the crown, and brother-in-law of the King. We had letters to deliver to him from the ambaſſador, and others for the lady of the grand-chancellor, from the Queen, and from the Marquis of Arquien his father. This nobleman requeſted us to dine with him: a number of excellent fiſh were on the table, but the greater part in oil, as it was Saturday; and here it may be obſerved, that the Poles do not reliſh oil unleſs it be very ſtrong, and they ſay, when it is ſweet, as we prefer it, it has no ſmell. The equerry is at the end of the table with a large ſpoon, by which every-body is ſerved; it is neceſſary to have a knife and fork in one's pocket, elſe one may very probably be obliged to make uſe of one's fingers. The grand-chancellor has a very handſome daughter, about thirteen or fourteen years of age, and two boys ſomewhat younger.

This nobleman had the goodneſs to ſend us a chariot to go to the ſalt mines of Vicliſka, which are a good league diſtant from Cracow. It was to this place we went to admire the effects of nature in her different productions. In the middle of the ſquare of the city, one ſees a ſhed under which, one no ſooner enters, than a large wheel is obſerved, which horſes are turning, and which is employed to raiſe the ſtones which are drawn from the mine. Near this wheel, there is a hole dug as wide as a very large pit, and covered wholly over with large pieces of wood, fixed the one to the other. It was by this aperture, that we deſcended to that abyſs; but before ſetting out on this journey, they clothed us with a kind of ſurplice. They moved a great number of ropes and girths, which were fixed to the great cable, the one after the other. Five or ſix men made preparations to go down with us, and lighted a number of lamps, while others ſurrounded the mouth of the hole, and began to ſing that paſſage of the Paſſion, where theſe words are, *Expiravit Jeſus*, and ſtill continued in the moſt frightful tone, the *De profundis*. I confeſs, that at this time, my whole blood freezed; all the preparations for this living interment appeared to me ſo horrible, that I wiſhed to be a great way off from the place where I was; but matters had gone too far; I was obliged to bury myſelf alive in this grave. One of our guides placed himſelf at the end of the cable, with a lamp in his hand; I then placed myſelf on my girth above his head; one of the miners placed himſelf above me; my comrade was above him, and another was over his head, with a lamp in his hand, and another above him; ſo that there were more than a dozen of us, one above another, fixed to the cable, like ſtrings of beads,

in a poſture, not the moſt agreeable in the world; for not only did we run the riſk of the cable breaking, but we were alſo afraid, leſt the cords that ſupported us ſhould give way, and leſt thoſe of others, which would fall upon us, ſhould break.

We deſcended a hundred long toiſes in this manner; and we at length found ourſelves in a place, very ſpacious, and very deep, in the middle of which we found a chapel, where maſs was frequently ſaid; from whence we were conducted by roads without end where they had removed the ſalt, which they break off in large pieces, which three horſes can with difficulty draw. This ſtone is of an aſh-colour, and ſparkles like diamonds; it is not hard, and the ſmall pieces which fall off in cutting it, are put into barrels, and are ſold in that ſtate. This ſtone is infinitely ſalter than our exciſe ſalt, and becomes white when it is piled up; but they make a ſalt of the water which they draw from the deepeſt places of the mine, which, after it hardens, becomes the whiteſt and the fineſt, that can poſſibly be ſeen. From this quarry, we deſcended to another, for there are ſeven of them, the one above the other, and when we were near the laſt, we found a rivulet of freſh water, the beſt I ever drank. This is one of the greateſt curioſities I ever beheld in my life, to ſee a water iſſuing from and running over ſtones of ſalt, without taking the taſte of it. There are alſo other rivulets found here, but their waters are perfectly ſalt. After having deſcended for two hours, we arrived, at length, at the laſt quarry, where the men were working: they cut for us a ſtone which fifty horſes would have been unable to draw; and a ſingle man ſevered this ſtone from the rock, with great eaſe. When this piece has fallen, they cut it into round pieces, the ſhape of a barrel, that they may be able to roll it into the carriage. We found in this pit a number of men and horſes, who wrought at wheels made for the purpoſe of raiſing the water.

In this mine, ſalt is found of various prices, and veins, ſome of which are better than others. The ſmalleſt is called Ziclona, the next Zibicoa, and the beſt of all Ockavata. The firſt kind is ſold for twelve guldens the ton, which weighs ſix hundred pounds, the ſecond thirteen, and the third ſixteen. This laſt is like cryſtal, and equally tranſparent, and is divided into little ſquares like ice.

We travelled near four hours in this mine; and we were aſſured, that, ſo great is its extent, a perſon would be unable to go through every part of it in fifteen days. Along the whole length of the vaults of this quarry, ſalt-water petrified may be obſerved hanging like icicles at a rain ſpout; and when it has become hard enough to be wrought, the workmen make chaplets of it, and little utenſils of that kind.

We aſcended by the ſame ladder by which we deſcended; and I was ſtill more uncomfortable in going up than in coming down; for the rope that ſupported me not being ſufficiently fixed to the cable, ſlid off from time to time, and cauſed me great uneaſineſs; and without deceiving, I confeſs, that I felt extremely diſagreeable, and I promiſed, that I ſhould never reviſit theſe ſubterraneous regions. To travel this journey once in one's life is perfectly ſufficient.

We remained three or four days, after which, we ſet out for Vienna. We paſſed through Zator-Ozvienzin, and other places belonging to Poland.

A JOURNEY TO GERMANY.

The firſt city in Germany which one meets with in Sileſia is ——— and which is dependant on a particular prince who is called Count Balthaſar. We travelled from thence to Olmutz, the ſeat of the biſhopric. The palace of the biſhop, who is both ſpiritual and temporal prince, is as fine a one as can be ſeen in Germany. We obſerved,

that the principal occupation of the ſcholars is, to go at night, from ſtreet to ſtreet, and ſing, when they beg for alms: this is a common practice of all the ſtudents of Germany.

We arrived at Vienna on the 20th day of September. One part of the court was abſent, and there was only here that of the Empreſs Dowager, who is of the houſe of Tyrol. The Emperor was at Oldenburg, where he held a diet, which all the Palatines and great lords of Hungary attended, both to ſettle the affairs of the rebels, which have occupied attention for more than fifteen years, and to aſſiſt in the coronation of the Empreſs, Queen of Hungary. The Emperor arrived two days after at Vienna; and we returned with him from Hungary. He intended to paſs the whole winter at Vienna, and afterwards to go to the diet at Ratiſbon.

The Hungarians are proud and magnificent in diamonds. The Palatine of Hungary or Vice-King is the richeſt: he had lately received the order of the Fleece from the King of Spain, vacant by the death of the Preſident, who had married the Princeſs of Holſtein, where I was preſent, and where all the people have their rendezvous; he had long adminiſtered the affairs of the Empire, and has ſince been blamed, and turned out of the miniſtry. Abeley has taken his place in the government.

The Hungarians are not tall, but their dreſs tends to give them a good air, together with the cock feathers which they wear upon their heads; they carry as many feathers as they have beheaded Turks in battle. Their country is the moſt productive in the world in corn, wine, and paſturage, but they are at preſent ruined; their wine of Tockay is eſteemed the beſt.

Vienna is the capital of Auſtria, and the ſeat of the empire; it was attacked in —— by the great Soliman, with an army of an hundred thouſand men; but he was obliged to raiſe the ſiege. The Turkiſh arms, which are above the tower of Saint Stephen, are witneſſes of a good reſiſtance; they have been left there, either as a mark of this action, or from the articles of the capitulation concluded in this manner. The city of Vienna is not large, but it is populous, notwithſtanding the horrid ravages of the plague two years ago, which deſtroyed more than two hundred thouſand men. The ſtreets are handſome, and eſpecially thoſe of the quarter of the nobles. The churches are magnificent here, and above all thoſe of the Jeſuits, who have three convents here; and are the maſters at Vienna. They gather a very conſiderable tax upon thoſe who enter the city after eight o'clock in ſummer, and ſix in winter; one muſt pay four-pence, and this is a dreadful monopoly. All the faſhionables aſſemble in the church of Saint Michael and Sainte-Croix; the ladies are placed on one ſide, and the gentlemen on the other. We ſaw there the ſiſter of Montecuculi, the Counteſs of Arach ——— and for cavalier Noſtiche Bouquin ———.

The gala days with the Emperor are certain days of rejoicing, when every body is ſuperbly dreſſed. The precious ſtones are to be met with in abundance: and I do not believe there is any place in the world where they are more plenty; the rejoicings take place on the Emperor's birth-day, on thoſe of the Empreſs &c.

The Emperor is a younger ſon of Ferdinand the Third. His elder brother died Arch-Duke at eighteen or twenty years of age; he was a very handſome Prince. The Emperor was taken from among the Jeſuits to be put in his place; but he was rather born for the convent than the throne.

Ferdinand the Third had three wives, the firſt was called Mary, the daughter of Phillip the Third, King of Spain, by whom he had three ſons. The firſt, as I have ſaid, died King of the Romans, the ſecond is at preſent Emperor, and the third died Biſhop of Paſſau and of Breſlaw.

The ſecond wife of Ferdinand was of the houſe of Inſpruck, who died in child-bed very young: her tomb is to be ſeen at the church of the Dominicans.

The third who is ſtill living, is called Empreſs Leonora, Dowager, ſhe is of the houſe of Mantua, aunt of the Ducheſs of York. She has two daughters; the eldeſt married Michael Coribut Wienowieſki, King of Poland, and has ſince been married to the Duke of Lorraine; the ſecond was married about two years ago to the Duke of Neubourg, brother-in-law of the Emperor.

The Emperor is called Leopold Ignatius ſon of Ferdinand the Third, and of Mary daughter of Phillip the Third, King of Spain. He was born the 9th day of June 1640; and was raiſed to the Imperial dignity in the year 1659. He has had three wives like his father. The firſt was the Infanta of Spain, daughter of Phillip the Fourth, only ſiſter of the preſent King, Charles the Second, and ſiſter of the father of the preſent Queen of France. She has a daughter, called the Arch-Dutcheſs, about fourteen or fifteen years of age, who is lame.

The ſecond was of the houſe of Inſpruck.

The third is of the houſe of Neubourg. He married this Princeſs about four or five years ago; and he has a ſon by her about four years old, who is called the Arch-Duke.

The Arch-Dutcheſs had great expectations of being married to the King of Spain; it is even ſaid that they ſaluted her as Queen for ſome time at the court. There has been always much jealouſy between this young Arch-Ducheſs, and the other daughter of the Empreſs Dowager, who has been married to the Duke of Neubourg, as having both of them the ſame pretenſions, and both hoping to be Queen of Spain. And the old Empreſs was much ſurpriſed when ſhe learned the marriage of the King of Spain, with Mademoiſelle, becauſe they had flattered her, that, if ſhe made the Emperor declare war againſt France, her daughter would be Queen of Spain; in which ſhe was ſucceſsful, for ſhe is very ingenious.

This Princeſs, ſeeing her hopes diſappointed in one quarter, ſought after a crown elſewhere, and endeavoured to negociate her marriage with the King of Sweden; but the Princeſs of Denmark had previouſly made too deep an impreſſion on his heart, to be ſupplanted: thus, ſeeing no more crowned heads, ſhe was obliged to marry the Duke of Neubourg; but ſhe treated him with inconceivable haughtineſs.

The preſent Arch-Ducheſs is niece of that Princeſs, and they have often been rivals. No other match can be obſerved for her but the Duke of Florence, the Princeſs of Saxony being at preſent married to the Elector of Bavaria.

The Emperor is Arch-Duke of Auſtria, and King of Hungary and Bohemia; he has the only Arch-duchy in the world, and his children bear the title of it. They bend the knees before him; and the Emperor himſelf, when bowing at the altar, bends his two knees, without however putting them to the ground.

The council of conſcience of the Emperor is compoſed of a capuchin, called Father Emeric, Biſhop of Vienna, and of Father Richard, a Jeſuit, from Lorraine.

The Emperor is very dévout; he goes almoſt every day to dine with the monks or the religious. When he travels, it is without noiſe, for he has neither drums nor trumpets. His guards, called *drabans*, in number a hundred or two hundred, with a partizan in their hands, clothed in black, all in a cloak laced with yellow, form a hedge in the middle of which the Emperor paſſes in his chariot, which is liker a cheſt than any thing elſe. There is never any perſon at his ſide; and the Empreſs ſeats herſelf at the other end.

The

The horſes are harnaſſed with ropes, and the coachman is on horſeback, ſince one of them heard upon his ſeat, a ſecret that he revealed. All the attendants travel on horſeback.

Before the Emperor can be elevated to the Imperial dignity, he muſt have been elected King of the Romans, and he cannot enjoy this title, till he is fourteen years of age. The Emperors are elected and crowned at Frankfort, but the crown is at Aix-la-chapelle.

The Emperor is very fond of hunting; I was at a hunt, which he made on his return from Oldenbourg, where they killed eighty or ninety wild boars with the ſword. Thoſe who are near the Emperor kill them from a lodge which is prepared for him. They treat the Emperor with the reſpect due to His Sacred Majeſty. He carries the order of the Fleece; but he does not give it, and it belongs ſolely to the King of Spain.

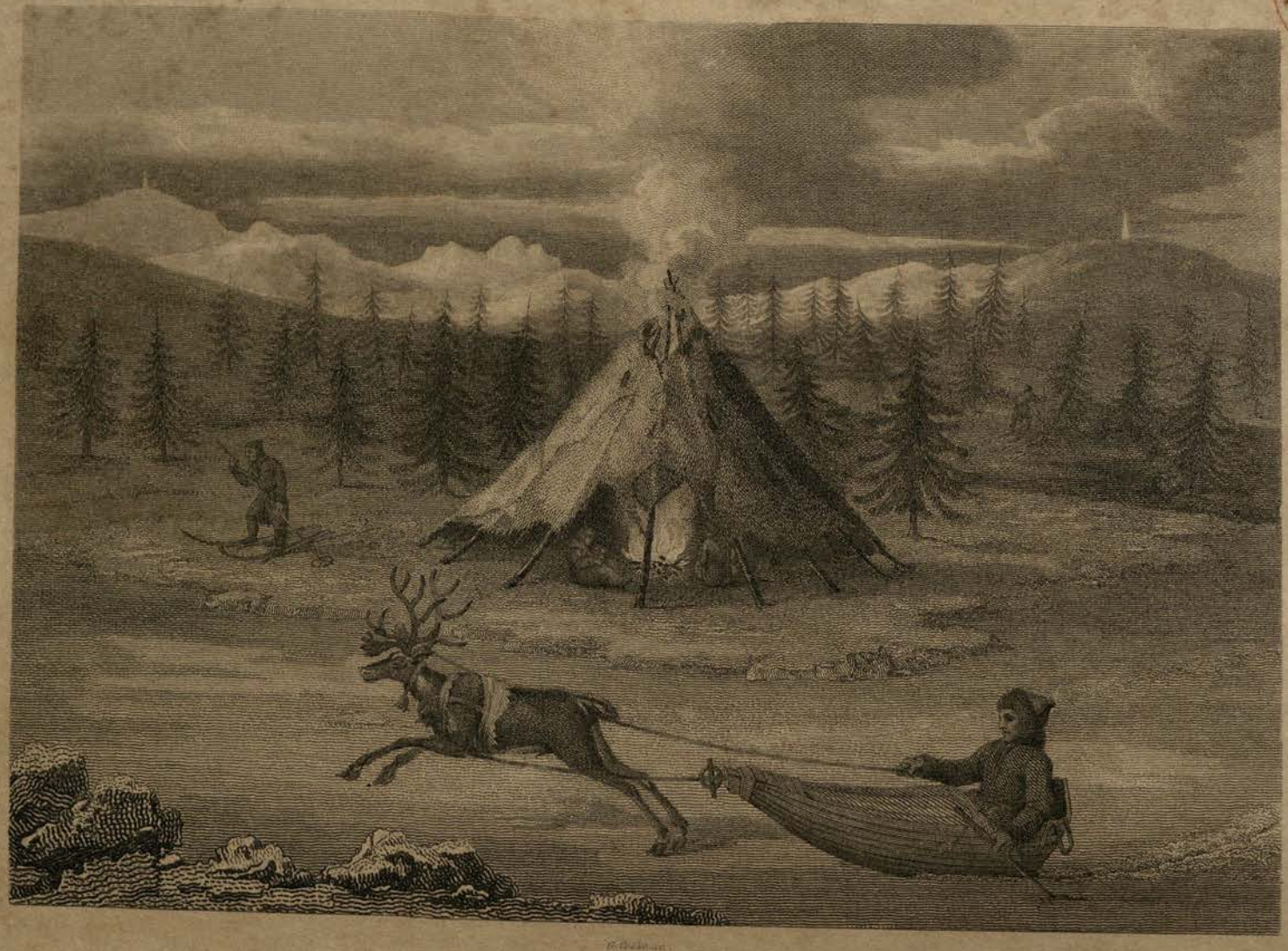
We never have ambaſſadors at Vienna, becauſe Spain wiſhes to have the precedence, as being of the ſame houſe. The Marquis of Seleville was, at this time, envoy extraordinary. We lived with the Marquis, and I had a private converſation with the Marchioneſs; ſhe is one of the moſt intelligent and virtuous ladies I have ever known. We knew there M. de Saint-Laurent, couſin of Madame the Marchioneſs Pigore. We dined ſeveral times with the Count de Stirum.

The Count of Staremberg is governor of the city; he wiſhed to have a diſpute with Meſſrs. de Marfillac and d'Alincourt, becauſe they had not told their names at the court.

Vienna takes its name from a little river, which paſſes between the ſuburb of Iſlaw and the city, which, when it overflows its banks, makes dreadful ravages. The Danube paſſes here alſo. It is the largeſt river in Europe; it takes its riſe in ——— and after flowing ſeven or eight hundred leagues, it falls into the Black Sea, by ſeven mouths. Its courſe is contrary to that of all the other rivers of the world; it flows from weſt to eaſt, and there is no other, except the Po, that reſembles it.

The Louvre is a large ſquare ſtructure, which contains nothing remarkable. Its court is uſed as a riding-houſe. The gentlemen have ſteps of wood to aſſiſt them in mounting their horſes.

MEMOIR



Scene in Lapland.

MEMOIR READ BEFORE THE ROYAL ACADEMY OF SCIENCES, THIRTEENTH OF NOVEMBER, 1737, ON THE MEASURE OF A DEGREE OF THE MERIDIAN AT THE POLAR CIRCLE.

[By M. Maupertuis. Newly tranſlated.]

EIGHTEEN months ago I ſubmitted to this aſſembly the object and plan of a voyage to the polar circle; I have now to render them an account of its ſucceſs: in doing which it may firſt be neceſſary to advert to the ideas which were the cauſe of its being undertaken.

M. Richer having noticed at Cayenne, in 1672, that gravity in that iſland near the equator was leſs than in France, the learned turned their eyes towards the conſequences that might reſult from this famous diſcovery. One of the moſt illuſtrious members of the academy maintained, that it proved as well the revolution of the earth on its axis, (which did not require to be proved) as the flatneſs of it towards the poles, which was a paradox. M. Huygens applying the theory of centrifugal force, of which he was the author, to the parts which conſtitute the earth, demonſtrated that taking theſe parts as gravitating uniformly towards a centre, and making their revolution round an axis, it muſt neceſſarily follow to ſupport an equilibrium, that they form a ſpheroid flattened towards the poles. M. Huygens even determined the proportion of flatneſs, and this by the ordinary principle of gravity.

Newton was the partiſan of a different theory, of the attraction of the particles of matter one towards the other; and came to the ſame concluſion that the earth was flattened, although by his computation in a different proportion. In fact, when by the laws of ſtatics we examine the figure of the earth, every theory leans to its being flat; and one cannot imagine a lengthened ſpheroid, unleſs by very forced hypotheſes on gravity.

From the firſt eſtabliſhment of the academy, one of its principal objects had been the meaſurement of a degree of the meridian of the earth: M. Picard had determined this degree towards Paris with ſuch exactneſs, as left nothing further to wiſh for in appearance. But this meaſure could be general only in caſe the earth were ſpherical; if the earth were flattened, it would be too long for the degrees towards the equator, and too ſhort for thoſe towards the poles.

When the meaſurement of the meridian which traverſes France was finiſhed, we were ſurpriſed to learn that the degrees towards the north were ſhorter than thoſe towards the ſouth; this was diametrically oppoſite to the effects which ought to follow if the earth were flat towards the poles. According to theſe meaſurements it ſhould be lengthened towards the poles; other experiments made on the parallel which traverſes France, confirmed this extenſion, and theſe meaſurements had great weight.

Thus the academy was divided, the information it poſſeſſed cauſed it to doubt; when the King choſe to have this great queſtion decided, a queſtion not like thoſe vain ſpeculations with which the idle amuſe themſelves, not a uſeleſs ſubtlety of philoſophy, but a matter of real influence on aſtronomy and navigation.

In order to determine properly the figure of the earth, it was neceſſary to compare two degrees of the meridian as different in latitude as poſſible; becauſe whether the degrees increaſe or diminiſh in length towards the pole, the ſlight difference between adjoining ones might be loſt in the errors of obſervations; inſtead of which, if the two degrees compared were at great diſtance one from the other, the difference being repeated

peated as often as there are intermediate degrees, would make together a ſum too conſiderable to eſcape the obſervers.

M. Le Compte de Mauripas who is attached to the ſciences, and who is deſirous of rendering them ſerviceable to the ſtate, found united in this undertaking, an advantage to navigation, and to the academy, and the proſpect of its being of utility to the public, inſured the attention of the Cardinal de Fleury, in the midſt of war. The ſciences found in him that protection, and aſſiſtance, which could ſcarcely be expected in time of the moſt profound peace. M. Le Compte de Mauripas quickly after ſent to the academy the orders of his Majeſty, to have the queſtion decided reſpecting the figure of the earth; the academy received them with joy, and haſtened by ſeveral of its members to put them in execution; ſome were deſtined to the equator, to meaſure the firſt degree of the meridian, and ſet off a year before us, the others for the north to meaſure a degree as near to the pole as poſſible. The ſame zeal actuated thoſe who went to expoſe themſelves to the ſun under the torrid zone, as them who were to experience the horrors of winter in the frozen regions; either had but one aim, that of rendering themſelves uſeful to their country.

The party deſigned for the north was compoſed of four academicians, Meſſrs. Clairaut, Camus, Le Monnier, and myſelf, and of Mr. L' Abbé Outhier, accompanied by M. Celſius, the celebrated profeſſor of aſtronomy at Upſal, who aſſiſted us in all our labours, and whoſe information and advice were very uſeful to us. Were it permitted me to ſpeak of my other companions, of their firmneſs, and their talents, it would be viſible, that however difficult the work we undertook, with their concurrence it muſt have been eaſy.

A long time has elapſed ſince we heard laſt from thoſe gone to the equator: little more of that expedition is known beſide the trouble it has met with; and our experience has taught us to feel for thoſe engaged in it; we have been more fortunate, and are returned to bring to the academy the fruits of our toil.

The veſſel that bore us having arrived at Stockholm, we haſtened to ſet out towards the bottom of the gulph of Bothnia, where we could chooſe better than by truſting to charts, which of the two coaſts of the gulph would be moſt ſuitable to our operations. The perils with which they threatened us at Stockholm did not deter us; nor the kindneſs of his Majeſty, who, in ſpite of the orders that he iſſued for us, ceaſed not from teſtifying his concern at ſeeing us depart on ſo dangerous an adventure.

We arrived at Torneo in time to ſee the ſun ſhine without ſetting for ſeveral days; as is uſual in thoſe climates about the ſummer ſolſtice; an admirable ſight to an inhabitant of the temperate zones, notwithſtanding his knowledge of ſuch being the caſe at the polar circle.

It perhaps will not be uſeleſs here to give an idea of the work we had laid down, and the means we had to take in meaſuring a degree of the meridian.

Nobody is ignorant that as one advances towards the north, the ſtars placed towards the equator appear to ſink; and on the contrary thoſe ſituated towards the pole, to riſe: it is very probable that the obſervance of this phenomenon afforded the firſt proof of the roundneſs of the earth. This difference in the meridian height of a ſtar, which we perceive in tracing an arc of the meridian, I call the amplitude of that arc; it is this which is the meaſurement of its curve, or in other words, it is the number of minutes and ſeconds which it contains.

Were the earth entirely ſpherical, this difference of the height of a ſtar, (this amplitude) would always be in proportion to the arc of the meridian paſſed over. If in order to ſee a ſtar change its elevation one degree, it might be neceſſary at Paris to paſs over

over a ſpace of 57,000 toiſes, the ſame diſtance ſhould be gone over at Torneo, to find the ſame change in the height of the ſtar.

If on the contrary, the ſurface of the earth were uniformly even, however great the diſtance paſſed over towards the north, the ſtar would appear neither more, nor leſs elevated.

If then the ſurface of the earth be unequally curved in different regions, to find the ſame difference of the elevation of a ſtar, it will be neceſſary in thoſe different regions, to paſs over unequal arches of the meridian of the earth; and thoſe arches whoſe amplitude is a degree, will be longer where the earth is more flattened. So that if the earth be flattened towards the poles, a degree of the terreſtrial meridian will be longer towards the poles than at the equator, and hence the figure of the earth may be aſcertained by comparing the different degrees one with the other.

By this will be ſeen, that to have the meaſure of a degree of the meridian of the earth, a diſtance on this meridian muſt be meaſured, and the change of the elevation of a ſtar at the two extremities be known, in order to be able to compare the length of the arch, with its amplitude.

The firſt part of our work conſiſted then in meaſuring a conſiderable ſpace upon the meridian, and for this purpoſe a ſucceſſion of triangles was neceſſary, which might communicate with ſome baſe, whole length might be meaſured by the pole.

We had always entertained the hope of being able to make our obſervations upon the ſhores of the Gulf of Bothnia. The facility of croſſing by ſea to the different ſtations, of tranſporting the inſtruments in boats, the advantage of obſervations, that the iſlands of the gulf marked in ſuch number upon the charts, ſeemed to hold out to us; all theſe had pre-determined us in favour of the coaſt and iſles. We proceeded with impatience to reconnoitre, but all our voyages for that purpoſe, ſerved only to ſhew us the neceſſity of giving up our firſt intention. Theſe iſlands which lay off the ſhores of the gulph, and the coaſt of the gulf itſelf, which we had repreſented to our fancy as promontories, viſible at a great diſtance, and from which we might diſtinguiſh others equally diſtant; all theſe iſlands were level with the water, and conſequently quickly hid by the roundneſs of the earth. They even concealed each other towards the borders of the gulph, when they were too near; and where ranged along the coaſts, they did not advance far enough into the ſea, to afford us the direction we required. After repeated fruitleſs endeavours to obtain in theſe iſlands what they could not afford, we were obliged to give up all hope, and abandon them.

I travelled from Stockholm to Torneo in a coach with the reſt of the company; but chance having thrown in our way, in the courſe of this long journey, the veſſel which bore our inſtruments and ſervants, I went on board, and arrived at Torneo ſeveral days before the others. On landing I met with the governor of the province who was going to viſit Northern Lapland, (part of his government): I joined him in order to gather ſome idea of the country in the abſence of my companions, and penetrated fifteen leagues towards the north. On the night of the ſolſtice I aſcended one of the higheſt mountains of this country, called Avaſaxa; and returned in ſufficient time to be at Torneo on their arrival. In this journey, which laſted but three days, I remarked that the river Torneo ran pretty cloſely in the direction of the meridian as far as I had gone: and noticed on all ſides high mountains that afforded ſtations perceptible at great diſtances.

We thought then of beginning our operations to the north of Torneo upon the ſummits of theſe mountains, but this appeared to us ſcarcely poſſible.

We had, in the deſerts of a country hardly inhabitable, in the immenſe foreſt which extends from Torneo to the North Cape, to effect operations, difficult even in the moſt com-

commodious countries. There were but two modes of getting forward in theſe deſerts, to both of which we were obliged to have recourſe; the one by navigating a river full of cataracts, the other by proceeding on foot through thick foreſts, or deep marſhes; and allowing we ſhould get through the country after the moſt tedious marches, we had to ſcale rugged mountains, clear the ſummits of theſe mountains of the trees which there impeded the ſights, live in theſe deſerts upon the coarſeſt food, and expoſed to flies ſo tormenting, that they oblige the Laplanders and their rein-deer to abandon the country during this ſeaſon, to ſeek, on the ſhores of the ſea, a more tolerable reſidence.

To ſum up all, the work was to be undertaken without knowing, or being able to learn, whether it was practicable; without knowing whether after ſo much pains, the want of one mountain might not abſolutely ſtop the courſe of our triangles; and without knowing whether we ſhould be able to find upon the river a baſe that could be united with our triangles. Should all theſe ſucceed, we had afterwards to conſtruct obſervatories on the moſt northern of our mountains; a train of inſtruments more complete than are to be found in many of the obſervatories of Europe were to be tranſported there; and aſtronomical obſervations to be made the moſt minutely exact.

If on one hand theſe different obſtacles were ſufficient to alarm us; on the other the work had many attractions. Beſides the difficulties we had to overcome, we had to meaſure a degree in all probability as far towards the north as is permitted man to meaſure, the degree which cuts the polar circle, and of which one part is in the frozen zone. After all, giving up the hope of being able to make uſe of the iſlands of the gulph, this was our laſt reſource; for we could not ſatisfy ourſelves by deſcending to the more ſouthern provinces of Sweden.

We left Torneo on Friday ſixth July, with a company of Finniſh ſoldiers, and a great number of boats laden with inſtruments, and the moſt indiſpenſible neceſſaries of life; and began to aſcend the great river, which proceeding, from the extremity of Lapland, empties itſelf into the Bothnick Sea, after dividing into two branches, which form the little iſland Swintztar, on which the town is built in latitude 65° 51′. From that day we lived in the deſerts and on the tops of mountains, which we were deſirous of uniting by triangles. After having aſcended the river from nine o'clock in the morning until nine at night, we arrived at Korpikyla, a hamlet on its banks, inhabited by Fins; we landed there, and after marching a long time acroſs the foreſt, we arrived at the foot of Nirva, a ſharp mountain, whoſe ſummit is compoſed of rock alone, which we aſcended, and upon which we eſtabliſhed ourſelves. On the river we had been grievouſly incommoded by large flies with green heads, which drew blood wherever they ſtung; on Nirva we were plagued with ſeveral other kinds ſtill more tormenting.

Two young Lapland girls were keeping a little herd of rein-deer upon the ſummit of this mountain, and from them we learned an antidote againſt the flies of the country: theſe poor wenches were ſo much hid by the ſmoke of a great fire which they had kindled, that we could ſcarcely ſee them; and very ſoon we were ſurrounded by a ſmoak as thick as theirs.

While our party was encamped on Nirva, I left it at eight in the morning with Mr. Camus, to reconnoitre the mountains towards the north; we aſcended the river again as far as to the foot of Avaſaxa, a high mountain, whoſe ſummit we ſtripped of its trees, and erected a ſignal upon it. Our ſignals were hollow cones made by a number of great trees, which being deprived of their bark, were ſo white as to be eaſily diſtinguiſhed at the diſtance of ten or twelve leagues; their centre in caſe of

accident

accident was eaſily to be found again, by marks which we made on the rocks, and ſtakes which were driven deep into the earth and covered again by great ſtones: in ſhort theſe ſignals were ſufficiently commodious for obſervations, and as ſubſtantially conſtructed as moſt of the buildings of the country.

As ſoon as the ſignal was finiſhed, we deſcended the mountain, and having embarked on the little river Tenglio which paſſing the foot of Avaſaxa, empties itſelf into the great river; we went up it as far as to that part which ſeemed to us neareſt to a mountain apparently calculated for our work; there we landed, and after a march of three hours acroſs a marſh, arrived at the foot of Horrilakero. Although greatly fatigued we aſcended it, and paſſed the night in cutting down what trees we found. A great part of the mountain is of red ſtone, interſperſed with a ſort of white cryſtals, long, and tolerably parallel to one another. The ſmoak was not here a preventative againſt the flies, more vexatious upon this mountain than on Nirva. We were obliged notwithſtanding the exceſſive heat to cover our heads with our Lapmudes (a dreſs made of the ſkins of rein-deer,) and to cauſe ourſelves to be ſurrounded by a thick rampart of branches of fir, and even by whole trees which almoſt almoſt overwhelmed us, but which preſerved us only for a ſhort time.

After having felled all the trees on the top of Horrilakero, and conſtructed a ſignal there, we left it and retraced our road to find the boats which we had drawn into the wood; it is thus the inhabitants of the country manage for want of cordage, which is very ſcare with them. A few very thin planks of deal compoſe their ſkiffs, ſo light, and ſo flexible, that notwithſtanding they continually ſtrike againſt the ſtones with which the rivers are full, borne by the whole violence of the torrent, they bear the ſhock without injury. It affords a ſight, terrible for thoſe unaccuſtomed to it, and aſtoniſhing to all, to behold this frail machine in the midſt of a cataract the noiſe of which is deafening, carried away by a torrent of waves, froth, and ſtones; ſometimes borne up aloft, and at others loſt amid the waves; one dauntleſs Fin ſteering it with an oar, while two others row with all their might, to eſcape the following waves, that threaten to overwhelm them; at ſuch times the keel is often above the water, and only ſupported by one extremity preſſing on a wave, which ſinks at every inſtant. Although theſe Fins be particularly bold, and ſkilful amid cataracts, they are every where elſe ingenious in ſteering ſmall veſſels, in which moſt frequently they have nothing but a tree with its branches, to ſerve for a maſt, and ſails.

We re-embarked on the Tenglio, and having entered the Torneo, we ſailed down it to return to Korpikyla. Four leagues from Avaſaxa, we left our boats, and after walking nearly an hour in the foreſt, we found ourſelves at the foot of Cuitapari, a very rugged mountain whoſe top was a rock covered with moſs, commanding a proſpect all around for a conſiderable diſtance; from it on the ſouth we could diſtinguiſh the ſea of Bothnia, we raiſed a ſignal here from which we ſaw Horrilakero, Avaſaxa, Torneo, Nirva, and Kakama. We continued then to fall down the river, which between Cuitaperi and Korpikyla contains dreadful cataracts that it is not uſual to paſs in boats. The Fins did not fail to land in the neighbourhood of theſe, although exceſs of fatigue made it more ſupportable for us to paſs them in boats, than to walk a hundred paces. At length the eleventh of July at night we came to Nirva, where the remainder of our company was eſtabliſhed; they had ſeen our ſignals, but the ſky had been ſo much charged with vapour they had been unable to make any obſervation. I know not whether it was owing to the continual preſence of the ſun above the horizon which raiſed vapors that there was no night to condenſe, but during the two months that we paſſed upon theſe mountains the heavens were always overcaſt until the north wind

came to diſſipate the miſt. This diſpoſition of the atmoſphere often detained us eight or ten days on a mountain in waiting for the favorable opportunity of ſeeing diſtinctly the objects we wiſhed to obſerve. It was not until the day after our return to Nirva, that ſome angles were taken; and the following, under favor of a very bleak north wind, we completed our obſervations.

July the fourteenth we left Nirva, and while Meſſrs. Camus, Le Monnier, and Celſius went to Kakama, Meſſrs. Clairaut, Cuthier and myſelf paſſed on to Cuitaperi, whence on the ſixteenth M. L'Abbé Cuthier departed to place a ſignal on Pullingi. The eighteenth we took obſervations, which, notwithſtanding the interruption of thunder and rain, we completed by night, and the twentieth we ſet off, and arrived at midnight at Avaſaxa.

This mountain is fifteen leagues from Torneo, on the bank of the river; the acceſs to it is difficult, to aſcend it we had to paſs through a foreſt that continues for half its height; it is there divided by great heaps of ſharp and ſlippery ſtones from its remainder, which extended to the ſummit; I ſay extended, becauſe we cauſed all the trees that covered the top to be cut down. The N. E. ſide is a frightful precipice of rocks in which ſome falcons had made their neſt; at the foot of it the Tenglio runs, which turns round Avaſaxa before it throws itſelf into the Torneo. From this mountain the proſpect is beautiful; nothing interrupts the ſight towards the South, and the courſe of the river is diſcernible for a vaſt extent; towards the eaſt the Tenglio is traced through ſeveral lakes that it paſſes; on the north the view extends twelve or fifteen leagues, where it is interrupted by a multitude of mountains, heaped one upon the other reſembling chaos, among which it was not eaſy to find that which we had ſeen from Avaſaxa.

We paſſed ten days on this mountain, during which, curioſity often procured us viſits from the inhabitants of the neighbouring country; they brought us fiſh, ſheep, and ſuch wretched fruits as grow in their foreſts.

Between this mountain and Cuitapari, the river is exceeding broad, and forms a kind of lake, which as well as that it was extenſive, was very advantageouſly ſituated for our baſe; Meſſrs. Clairaut and Camus took upon themſelves the care of aſcertaining its direction, and for that purpoſe remained at Oſwer Torneo after our obſervations upon Avaſaxa were completed; while I went to Pullingi with Meſſrs. Le Monnier, Cuthier, and Celſius. On the ſame day that we left Avaſaxa we paſſed the polar circle, and arrived the next day (31 July) at three o'clock in the morning at Turtula, a kind of hamlet for the reapers of the little barley and graſs that grow in thoſe parts. After walking ſometime in the foreſt, we embarked on a lake which carried us to the foot of Pullingi.

It is the higheſt of the mountains, and extermely difficult of acceſs from the ſuddenneſs with which it riſes, and from the height of the moſs in which we could ſcarcely walk. We got to the ſummit however at ſix o'clock in the morning, and the ſtay we made from the thirty-firſt July to ſixth Auguſt was as painful as our aſcent. It was neceſſary we ſhould cut down a foreſt of the largeſt trees; and the flies were ſo troubleſome, that our ſoldiers of the regiment of Weſtro-Bothnia, a regiment diſtinguiſhed even in Sweden, where there are ſo many brave men; theſe men, enured to the greateſt hardſhips, were obliged to envelope their faces, and cover them with pitch; theſe inſects infected every thing we were about to eat; as ſoon as expoſed, our meat was black over with them. The birds of prey were not leſs famiſhed, they flew round us continually, to ſeize on ſome joints of mutton which were cooking for us.

The

The day after our arrival at Pullingi, M. L'Abbé Cuthier left us, accompanied by an officer of the ſame regiment which had rendered us ſo much ſervice; to erect a ſignal towards towards Pillo. On the fourth we perceived one on Niemi that the ſame officer had raiſed: having taken the angles between theſe ſignals, we left Pullingi the ſixth of Auguſt, (having ſuffered ſeverely), to go to Pillo; paſſing four cataracts we arrived there the ſame day.

Pillo is a village inhabited by a few Fins, near to which Kittis the loweſt of the mountains is ſituated; upon this our ſignal was placed. In aſcending towards it, we found a ſpring of the pureſt water, iſſuing from a very fine ſand, and which in the ſevereſt froſts of winter, preſerves its liquid ſtate; when we returned to Pillo at the end of winter, while the ſea at the bottom of the gulph, and all the rivers were become hard as marble, this water ſtill ran as in the middle of ſummer.

We were ſo fortunate on our arrival as to complete our obſervations, and ſtaid at Kittis only till the following day; leaving it at three o'clock in the afternoon, and arriving the ſame evening at Turtula.

Already a month had paſſed that we had lived in the deſarts, or rather on the tops of mountains, having no other bed than the ground, or a ſtone ſpread over with deer ſkins, nor any other nouriſhment than a few fiſh which the Fins brought us, or which we ourſelves caught, and ſome ſpecies of berries, or wild fruits which the foreſts afforded. The health of M. Monnier which was not proof againſt this kind of life; and which was conſiderably hurt at Pullingi, diminiſhed viſibly, and entirely failing him here, I left him at Turtula to deſcend the river, and go for its re-eſtabliſhment to the houſe of the rector of Oſwer Torneo which was the beſt, and almoſt the only aſylum the country poſſeſſed.

At the ſame time I left Turtula in company with Meſſrs. Cuthier and Celſius to traverſe the foreſt in ſearch of the ſignal that the officer had erected at Niemi, this was a terrible journey; we proceeded as far as to a little rivulet on leaving Turtula, when we got on board three ſmall boats, but they paſſed with ſo much trouble among the rocks, that we were every now and then obliged to get out, and leap from one to another. This rivulet led us to a lake, ſo full of little yellow grains of the ſize of millet, that its water was entirely coloured by it; I took them to be the chryſals of ſome inſect, and conjectured that they were thoſe of the flies which had ſo much tormented us, ſince I ſaw no others whoſe numbers could anſwer the quantity of grains, requiſite to fill a lake of tolerable ſize. At the end of this lake we had to walk to another of the fineſt water, on which we found a boat; we put our quadrant in it, and followed it along the ſhore. On theſe ſhores the foreſt was ſo thick that we were obliged to cut our way through, every moment inconvenienced by the height of the moſs, and by the fir trees which we met with lying on the ground. In all theſe foreſts there are nearly as many of theſe trees fallen as ſtanding, the ſoil which nouriſhes them to a certain point, is incapable of affording them nutriment beyond, and not deep enough to allow them to eſtabliſh themſelves firmly; one half periſhes or is blown down by the leaſt wind. All theſe foreſts are full of firs, and birch trees thus rooted up. Time has reduced the latter to duſt without occaſioning the ſmalleſt change in the bark: we were ſurpriſed to find that with the leaſt ſtroke we could cruſh and break them although of ſome ſize. It is this moſt likely which gave origin to the uſe that the Swedes make of the bark of birch; they cover houſes with it, and in fact nothing can be better adapted for the purpoſe.

In ſome provinces this bark is covered with earth, upon which gardens are formed upon the roofs, as on many of the houſes at Upſal. In Weſtro-Bothnia the bark

bark is faſtened by cylinders of fir, fixed to the ridge, declining on both ſides the roof. Theſe woods ſeemed only the ruins of foreſts, of which the greater part of the trees had periſhed; it was one of this deſcription, and the moſt hideous of them that we had to paſs through on foot, followed by twelve ſoldiers who carried our baggage. We came at length to the border of a lake of great ſize, and of the fineſt water in the world, we found two boats on it, into which having put our inſtruments and luggage, we waited their return at the ſide. A heavy gale, and the bad ſtate of the boats made their voyage tedious; they came back at length, we went on board, traverſed the lake, and got to the foot of Niemi at three o'clock in the afternoon.

This mountain, which the ſurrounding lakes, and the difficulties we had to ſurmount in reaching it, made appear like the enchanted grounds of fairy tales, would be delightful in any other part but Lapland: on one ſide a clear wood, the walks of which were as even as the alleys of a garden, in it the trees formed no impediment to our way, nor prevented the view of a charming lake that waſhed the foot of the mountain; on the other ſide were parlours and cloſets ſeemingly cut out of the rock, and to which nothing but the roof was wanting: theſe rocks were ſo perpendicular, ſo lofty, and ſo even, that they looked more like walls begun for ſome palace, than a work of nature. Frequently while there we ſaw thoſe vapours riſe out of the lake, which the inhabitants of the country call Haltios, and which they conceive to be the ſpirits to whom the guardianſhip of the mountains is committed: this particular mountain was formidable by its being the reſidence of bears; however we ſaw none, and it had more the appearance of the habitation of genii and fairies than the dwelling for bears.

The day following that of our arrival a fog prevented our obſervations; on the tenth they were interrupted by thunder and rain; the eleventh we completed them, and leaving Niemi, after repaſſing three lakes, we arrived at Turtula, at nine o'clock in the evening; whence on the twelfth we again ſet out for the houſe of the rector of Oſwer Torneo, which we reached at three o'clock in the afternoon, and where we met with our companions, leaving M. Le Monnier, and M. L'Abbé Cuthier: on the thirteenth, I proceeded with Meſſrs. Clairaut, Camus, and Celſius, for Horrilakero with four boats. We entered the Tenglio, which has its cataracts, but is more inconvenient from its ſhallowneſs, and the great number of ſtones in it, than from the rapidity of its waters. I was ſurpriſed to find on its banks, ſo near to the frozen zone, roſes of as lively crimſon as thoſe which grow with us. At nine o'clock in the evening we arrived at Horrilakero. We did not complete our obſervations here until the ſeventeenth, and leaving it the next day, we got to Oſwer Torneo by night, meeting with all our company.

The moſt ſuitable ſpot for eſtabliſhing the baſe had been fixed upon: and Meſſrs. Clairaut and Camus, after having viſited the banks of the river, had determined its direction, and fixed the length of it by ſignals which they had cauſed to be erected at its two extremities.

Having aſcended Avaſaxa in the evening to obſerve the angles which were to unite this baſe to our triangles, we ſaw Horrilakero all on fire. This is an accident frequent in theſe foreſts, where there is no ſubſiſting during ſummer except in the midſt of ſmoke, and where the moſs and the firs are ſo combuſtible, that oftentimes the fire that is lighted occaſions the conflagration of thouſands of acres. The ſmoke of theſe fires has frequently hindered us in our work as much as the thickneſs of the air. Seeing that it was highly probable that the fire of Horrilakero aroſe from the embers of that we had kindled, and which had been badly extinguiſhed, we ſent thirty men to cut away its communication with the neighbouring woods. Our obſervations on Avaſaxa were not completed before the twenty-firſt. Horrilakero ſtill continued burning; we ſaw it co-

vered with ſmoke, and the fire, which had reached the foreſt below, at intervals broke out with violence.

Some of the people ſent to Horrilakero reporting that the ſignal had been damaged by the fire; we ſent to re-conſtruct it, a work of no difficulty, from the precautions before noticed.

The twenty-ſecond we went to Poiky Torneo, on the bank of the river where the northern ſignal of the baſe was ſtationed, to make the obſervations neceſſary to unite it to the ſummit of the mountains; and on the twenty-third we left it for the other extremity of the baſe, where, on the bank of the river, at a place called Niemiſby, the ſouthern ſignal was placed. That night we ſlept in a pretty pleaſant meadow, from which M. Camus the next day went on to Pello, to prepare huts for us, and conſtruct an obſervatory on Kittis, where we were to make aſtronomical obſervations for aſcertaining the amplitude of our arch. After taking our obſervation from the ſouthern ſignal, we again aſcended Cuitaperi at night, where the laſt obſervation, which was to unite the baſe with the triangles, was completed on the twenty-ſixth.

We had juſt learned that the ſextant which we expected from England had arrived at Torneo, and we haſtened to that place to get it ready with the other inſtruments that we had, to carry to Kittis, where the ſeverity of winter was more to be dreaded than at Torneo, and where for which reaſon we were deſirous of beginning our obſervations for determining the amplitude of the arch, before the froſts ſet in. While all was preparing for the journey to Pello, we went up the ſteeple of the church built on the Iſle of Swentzar, which I notice, in order that it may not be confounded with the Finniſh church built in the Iſle of Bierckhohn, to the ſouth of Swentzar; and having obſerved from this ſteeple the angles which it made with our mountains, we again left Torneo the third of September with fifteen boats, the largeſt fleet which had ever been ſeen on the river, and arrived to ſleep at Kuckula.

The ſucceeding day we reached Korpikyla, and while part of our company continued their route towards Pello, I ſet off on foot with Meſſrs. Celſius and Cuthier for the Kakama, where we arrived at nine in the evening through a heavy rain.

The whole ſummit of Kakama conſiſts of foliated white ſtone, its leaves having a vertical direction almoſt perpendicular to the meridian. Theſe ſtones held the rain, which for ſome time back had fallen in ſuch manner, that every part which did not conſiſt of rock was covered with water; and it continuing to rain through the night, our obſervations could not be completed till the next day; we were conſequently obliged to paſs a ſecond night as damp and as cold as the preceding: on the ſixth our obſervations were finiſhed.

After the uncomfortable ſtay that we made at Kakama we left it, and urged by a continual rain through a foreſt where we had difficulty to keep our feet, we exerted ourſelves greatly to get forward, and after five hours walking arrived at Korpikyla: we ſlept there that night, and continuing our journey the next day, we reached Pello the ninth of September, where we met all together.

Our different expeditions, and a reſidence of ſixty-three days in the deſarts, had given us the beſt ſucceſſion of triangles poſſible: a work, the practicability of which was uncertain, and in which we ran great hazard of not ſucceeding, had turned out as fortunately as it could have done, had we poſſeſſed the power of diſpoſing the ſite of the mountains at our pleaſure.

Our mountains collectively with the church of Torneo formed a cloſe figure, in the midſt of which was Horrilakero, a focus ſerving to unite all the triangles of which our figure was compoſed: it was a long heptagon, in the direction of the meridian. This

figure

figure was ſuſceptible of a proof rather ſingular in theſe operations, depending on the natural qualities of polygons. The ſum of the angles of an heptagon on a level is 900°: the ſum of our heptagon upon a curved ſurface ought to exceed this a little, and we found it 900° 1′ 37″, according to our obſervations of ſixteen angles. Towards the middle of the figure we formed a baſe, the largeſt perhaps that ever was meaſured, and the moſt even; ſince it was on the ſurface of the river that it was to be meaſured, when it ſhould be frozen. The extent of this baſe ſecured to us an exactitude in meaſuring the heptagon, and its poſition left no room to apprehend that there could be any errors of moment, from the ſmall number of triangles in the midſt of which it was placed.

Indeed the length of the arc of the meridian which we were meaſuring was very convenient for the certainty of our work. If there be an advantage in meaſuring large arcs, inaſmuch that the errors which may ariſe in computing the amplitude are not greater for large than ſmall arches, and that diffuſed amid ſmall ones, they make a more conſiderable total of error than amid larger ones: on the other hand, the miſtakes which may be made in the triangles may have conſequences dangerous in proportion to the diſtance to be meaſured, and the number of the triangles. If the number be great, and the conveniency of a baſe for frequent proofs be wanting, theſe laſt errors may form a very diverging ſeries, and more than counterbalance the advantages derivable from large arcs. I had read to the academy before my departure a memoir on this ſubject, in which I determined the moſt advantageous length to be meaſured for a certainty of exactitude; this length depends on the preciſion with which the horizontal angles are obſerved, compared with that which the inſtrument may give, with which the diſtance of the ſtars from the zenith is taken; and applying the reflections which I made to our work, it will be found that a longer or ſhorter arc than ours would not have afforded ſo much certainty of its meaſure.

For obſerving the angles between our ſignals, we uſed a quadrant of two feet radius, with a micrometer attached, which being verified round the horizon, always gave the ſum of the angles very nigh by four proofs: its centre was always placed in the centre of the ſignals, every one took and wrote his obſervations ſeparately; and afterwards we adopted the mean of all the obſervations, which differed very little one from another.

On every mountain we took eſpecial care to obſerve the elevation or depreſſion of the objects choſen for taking the angles, and the reduction of the angles to the level of the horizon we eſtabliſhed on theſe heights.

This firſt part of our work, which might have been impoſſible, being thus happily terminated, we gathered freſh ſpirits to go through the reſt, which ſimply required labour.

In a ſucceſſion of triangles joined one to another by common ſides, the angles of which are known, one ſide being aſcertained, it is eaſy to find the remainder: we were ſure of poſſeſſing the exact diſtance from the ſteeple of the church of Torneo, which terminated our heptagon towards the ſouth, to the ſignal of Kittis which was its northern extremity, as ſoon as the length of our baſe ſhould be known; and the meaſurement of this we poſtponed till winter, when we ſhould not want either for time or ice.

We then turned to another part of our work, to determine the amplitude of the arc of the meridian comprehended between Kittis and Torneo, the meaſurement of which we looked upon as complete. I have already ſtated what this was which we had to determine. It was neceſſary to obſerve how much higher or lower the ſame ſtar when on the meridian appeared at Torneo than at Kittis, or what is the ſame, how much this ſtar on croſſing the meridian was more near or diſtant from the zenith of Torneo than of Kittis. This difference between the two elevations, or the two diſtances from the zenith,

was

was the amplitude of the arc of the terreſtrial meridian between Kittis and Torneo. This is a ſimple operation: it does not even require that one ſhould have the poſitive diſtances of the ſtar from the zeniſh of each place; it is ſufficient to take the difference between the diſtances: but this operation exacts the greateſt nicety and the utmoſt precaution. We had for the purpoſe a ſextant of about nine feet radius, ſimilar to that which Mr. Bradley uſes, and with which which he made his curious diſcovery of the aberration of the fixed ſtars. The inſtrument was made at London, under the inſpection of Mr. Graham, of the Royal Society of England. This able mechanic had ſtudied to unite in it every advantage and convenience that we could deſire, and himſelf graduated the limb.

There are too many things to notice in this inſtrument for my giving now a complete deſcription of it. Although what properly conſtitutes the inſtrument be very ſimple, its ſize, the number of pieces ſerving to render it commodious to the obſerver, the weight of a large pyramid nearly twelve feet high, which forms its pedeſtal, made its getting up to the ſummit of the mountains of Lapland almoſt an impracticable matter.

On Kittis two obſervatories had been built: in one was the time-piece of Mr. Graham, a quadrant of two feet, and an inſtrument conſiſting of a teleſcope fixed perpendicularly, and moveable about an horizontal axis, for which as well we were indebted to the care of Mr. Graham: this inſtrument was placed exactly in the centre of the ſignal, which ſerved as a point to our laſt triangle; it was uſed for determining the direction of the triangles with the meridian. The other obſervatory, much larger, was adjoining, and ſo nigh that one could diſtinctly hear the ticking of the time-piece from one to the other; the ſextant almoſt filled it. I ſhall ſay nothing of the difficulty of tranſporting ſo many inſtruments to the top of the mountain: it was effected, the limb of the ſextant was placed exactly on the level of the meridian we had traced, and we ſatisfied ourſelves of its exactneſs, by the time of the paſſing of a ſtar of which we had taken the elevation. To ſum up, every thing on the thirtieth of September was ready to begin obſerving, and the ſucceeding days the obſervations of the ſtar δ of the Dragon were made, in which the greateſt difference that occurred did not exceed $3''$.

While obſerving this ſtar with the ſextant, the other obſervations were not neglected: the time-piece was regulated every day with care by correſponding elevations of the ſun; and with the inſtrument which I before mentioned we obſerved the paſſage of the ſun, and the time of its paſſing the verticals of Niemi and Pullingi. By theſe means the ſituation of our heptagon in reſpect to the meridian was aſcertained, and eight of theſe obſervations, the difference between the wideſt of which did not amount to a minute, gave for a mean of the angle formed with the meridian of Kittis, by a line drawn from the ſignal of Kittis to the ſignal of Pullingi, $28° 51' 52''$.

All theſe obſervations were very happily completed, but rains and fogs had ſo much retarded them, that we had reached a period at which it was ſcarcely poſſible to undertake a return to Torneo; nevertheleſs other correſponding obſervations upon the ſame ſtar remained to be made there, and we were deſirous that the ſmalleſt poſſible interval ſhould occur between the obſervations, in order to obviate the errors which might ariſe from any motion of the ſtar (in caſe it ſhould have any of which we were ignorant).

It is ſufficiently diſtinguiſhable that the whole of this operation being founded upon the difference of the meridional height of a certain ſtar obſervel at Kittis and at Torneo, it is neceſſary that the ſtar ſhould maintain the ſame poſition; or at leaſt if it ſhould be liable to any change of elevation that it ſhould be known, in order not to confound ſuch motion with the curve of the arc deſired.

Aſtronomers for many ages have noticed a revolution of the ſtars round the poles of

the ecliptic, which cauſes the preceſſion of the equinox, and a change of declenſion in the ſtars, which we can compute upon, in the matter of which we ſpeak.

But there is in the ſtars another change of declenſion, on which, although more recently obſerved, I believe we may reckon as ſecurely as upon the other. Although Mr. Bradley be the firſt who diſcovered the rules of the change, the exactneſs of his obſervations, and the excellence of the inſtrument with which they were made, are equivalent to many ages of ordinary obſervations. He found that every ſtar obſerved during the courſe of the year, ſeemed to deſcribe in the heavens a ſmall ellipſis, of which the great axis is about 40″. As there appeared at firſt to be a great variety in this motion of the ſtars, it was not till after a long ſucceſſion of obſervations that Mr. Bradley diſcovered the theory upon which this motion, or rather this appearance, depends. If to diſcover ſo ſmall a motion required his nicety of obſervation, his intelligence as well was neceſſary to find out the principle which produced it. We will not attempt to explain the ſyſtem of that celebrated aſtronomer, which may be much better ſeen by conſulting No. 406 of the Philoſophical Tranſactions; all that we ſhall obſerve on the ſubject of this difference in the place of the ſtars, obſerved from the earth, is, that it ariſes from the motion of the light radiated by the ſtar, and the motion of the earth in its orbit, combined together. Were the earth motionleſs, it would require a certain inclination of the teleſcope through which a ſtar is obſerved to permit the ray emitted by the ſtar to traverſe its centre in coming to the eye. But if the earth, which bears the teleſcope, move with a velocity comparable to the velocity of the ray of light, it is no longer the ſame inclination which is neceſſary to give to the teleſcope; its poſition muſt be changed to allow the ray of light penetrating its centre, to reach the eye; and the different poſitions of the teleſcope will depend on the different directions in which the earth moves at the various ſeaſons of the year. The calculation being made on this principle, according to the velocity of the earth in its orbit, and according to the velocity of light, known by different experiments, the change of declenſion in the ſtars is found to be as ſtated by Mr. Bradley from obſervation; and one is enabled to ſubtract from the declenſion of every ſtar the quantity neceſſary for conſidering it as fixed, during the time that muſt elapſe between the obſervations that are compared with each other for determining an arc of the meridian.

Although the motion of every ſtar in the courſe of the year follow very exactly the law which depends upon this theory, Mr. Bradley has diſcovered yet an additional motion of the ſtars, much ſmaller than the two which we have mentioned, and which is not ſenſible until after the lapſe of ſeveral years. To perfect nicety this third motion ſhould be reckoned; but for our work, in which the time that paſſed between the obſervations was very ſhort, its effect is inſenſible, or rather much ſmaller than one can reaſonably hope to determine in theſe kind of operations. In fact, I conſulted Mr. Bradley to know if he had any obſervations upon the two ſtars that we uſed for aſcertaining the amplitude of our arc. Although he had not obſerved our ſtars, becauſe they paſs too far from his zenith to be obſerved with his inſtrument, he has been ſo good as to communicate to me his laſt diſcoveries on the aberration and the third motion of the ſtars, and the corrected copy which he has ſent for our amplitude, in which attention is paid to the preceſſion of the equinox, the aberration of the ſtars, and this new motion, does not ſenſibly differ from the amended ſcheme which we had made for the preceſſion and aberration alone, as in the detail of our operations will be ſeen.

Notwithſtanding we might ſafely rely upon the amendment for the aberration of light, we were willing to make this amendment as little as poſſible, in order to ſatisfy thoſe (if any there ſhould be) who might be unwilling to admit of Mr. Bradley's theory, or

who

who ſhould imagine that there were other motions of the ſtars: for this purpoſe it was fit that the interval between the obſervations at Kittis and at of Torneo ſhould be as ſhort as poſſible.

We had perceived ice as early as the nineteenth of September, and ſnow on the twenty-firſt. Several parts of the river were already frozen, and theſe firſt froſts, which were imperfect, prevented navigation for ſome time on it, yet left it impaſſable with ſledges.

In caſe of waiting at Pello, we ran the chance of not arriving at Torneo until a period which would occaſion too long an interval between the obſervations already made and thoſe we had to make there; we even riſked loſing the ſtar by the ſun which was approaching it, merging it in its rays. It would then be neceſſary to return in the midſt of winter, to take freſh obſervations of ſome other ſtar upon Kittis; but it was apparently neither practicable nor poſſible to paſs whole nights taking obſervations during the winter on that mountain.

By ſetting off we ran the riſk of being ſurpriſed by the ice in the river, and detained with all the inſtruments; there was no computing where, nor how long: we riſked as well the rendering fruitleſs our obſervations at Kittis, and we readily perceived how difficult it would be to repair ſuch a loſs, in a country where obſervations can ſo ſeldom be made, where throughout the ſummer we could not hope to ſee any of the ſtars which our ſextant could embrace, from their ſmallneſs, and from the continual day which renders them inviſible, and where the winter made the obſervatory of Kittis uninhabitable: we weighed all theſe difficulties, and reſolved to riſk the voyage. Meſſrs. Camus and Celſius departed the twenty-third with the ſextant: the following day Meſſrs. Clairaut and Le Monnier; and on the twenty-ſixth M. L'Abbé Outhier and myſelf: we were fortunate enough to arrive by water at Torneo the twenty-eighth of October, and were aſſured that the river had ſcarcely ever been navigable ſo late in the ſeaſon.

The obſervatory which we had cauſed to be prepared at Torneo was ready to receive the ſextant, and it was placed there on a level with the meridian. The firſt of November it began to freeze hard, and the ſucceeding day the river was frozen over: the ice no longer melted, but was quickly white with ſnow; and this vaſt river, which a few days before was covered with ſwans and various other water-fowl, was now no more than an immenſe plain of ice and ſnow.

On the firſt of November we began to obſerve the ſtar we had before obſerved at Kittis, and with the ſame care: the wideſt of theſe obſervations did not differ 1″. Theſe obſervations, as well as the former at Kittis, were made by day, without throwing light on the threads of the teleſcope: then taking a mean, reducing the parts of the micrometer into ſeconds, and having due regard to the change of the declenſion of the ſtar, during the time elapſed between the obſervations, as well for the preceſſion of the equinox as for the other motions of it, we found the amplitude of our arc 57′ 27″.

Our work now, as far as it could be, was complete; it was ſtopped without our being able to tell if we ſhould find the earth lengthened or flattened, becauſe we were unacquainted with the length of our baſe. What remained to do was not an operation difficult in itſelf, it was only to meaſure with the rod the diſtance between the two ſignals that were raiſed the ſummer before; but this meaſurement was to be made upon the ice of a Lapland river, in a country where the cold became daily more and more intolerable, and the diſtance to be meaſured was more than three leagues.

We were adviſed to delay the meaſurement until the ſpring, becauſe then in addition to the length of the days, the firſt thaws which happened on the ſurface of the ſnow, which are quickly ſucceeded by a new froſt, form a ſort of cruſt capable of bearing men; inſtead of which, during the coldeſt part of winter, the ſnow of theſe countries is

nothing but a fine and dry powder, generally four or five feet high, in which it is impoſſible to walk when once that height is attained.

In ſpite of what was every day before our eyes, we were fearful of being ſurpriſed by a thaw. We were ignorant of its being ſufficiently in time, in the month of May, to meaſure the baſe, and all the advantages we ſought in ſpring diſappeared before the ungrounded fear of miſſing our meaſurement.

In the mean time we did not know whether the height of the ſnow would allow of our walking on the river between the ſignals of the baſe; and Meſſrs. Clairaut, Outhier, and Celſius ſet off the tenth of December to try. The ſnows were found already very high; but as they did not leave us without hope of being able to meaſure, we all departed together for Ofwer Torneo.

M. Camus, aſſiſted by L'Abbé Outhier, employed the nineteenth and twentieth of December in adjuſting eight rods, of thirty feet each, by an iron toiſe which we had brought with us from France, and which, during the adjuſtment, we took care to keep in a place where the thermometer of M. Reaumur was at 15° above ⊙, and that of M. Prius at 62°, which is the temperature of the months of April and May at Paris. Our rods once adjuſted, the change which cold could effect in their length was not to be apprehended, ſince we had obſerved that heat and cold cauſed upon our deal meaſures much leſs ſenſible changes than upon the length of iron. Every experiment that we tried gave us variations of length almoſt imperceptible. Some trials which we made give me reaſon to ſuſpect that cold poſſeſſes the quality of lengthening rather than diminiſhing the length of wood, contrary to its known effect on metals. Poſſibly a remnant of ſap, which was contained in the meaſures we uſed, froze on being expoſed to the cold, and cauſed it to participate the property of liquids, whoſe volume augments upon freezing. M. Camus took ſuch pains in adjuſting theſe rods, that in ſpite of their extreme length, when they were placed between two gauges of iron, they fitted ſo exactly that the thickneſs of a leaf of paper of the thinneſt kind, additional or leſs, made the putting them between them impoſſible, or left room.

On Friday the twenty-firſt of December, the wintry equinoctial day, a remarkable one for ſuch a work, we began the meaſurement of our baſe towards Avaſaxa. The ſun at that time ſcarcely roſe by noon; but the long twilights, the whiteneſs of the ſnow, and the fires with which the heavens in this country are illuminated, afforded us every day ſufficient light to work during four or five hours. We left the houſe of the rector of Ofwer Torneo, where we lodged during this work, at eleven o'clock in the morning, and got on the river, when we were to begin the meaſurement, with ſuch a number of ſledges, and ſo numerous an equipage, that the Laplanders deſcended from their mountains to enjoy the novelty of the ſight. We divided ourſelves into two companies, each of which carried four of the meaſures we have ſpoken of. I ſhall ſay nothing of the fatigue, nor of the dangers of this operation: conceive what it muſt be, to walk in two feet depth of ſnow, loaded with heavy rods, that we had to place continually upon the ſnow and take up again, and this during ſo intenſe a froſt, that our tongues and lips froze to the glaſs on drinking brandy, which was the only liquor which could be kept ſufficiently liquid to drink, and could not be got away without taking off the ſkin; a froſt which nipped the fingers of ſome of us, and which continually threatened us with greater accidents. While our extremities were frozen, our labour made us ſweat. Brandy did not ſlake our thirſts; we were obliged to dig deep pits in the ice, which were almoſt as quickly cloſed, and from which the water could ſcarcely be brought in a liquid ſtate to the mouth; and we were obliged to run the riſk of the dangerous conſequences which were to be apprehended from taking this iced water at a time our body was ſo warm.

However

However the work advanced; ſix days labour had brought it ſo near to an end that no more than five hundred toiſes which could not be marked with ſtakes ſufficiently ſoon remained to be meaſured. The continuation of the meaſurement then was interrupted, the twenty-ſeventh, and while Meſſrs. Clairaut, Camus and Le Monnier buſied themſelves in fixing the ſtakes, in company with M. L'Abbé Outhier, I employed the day in an enterpriſe rather ſingular.

An obſervation of the ſlighteſt moment, and which in the moſt commodious countries might be overlooked, had been neglected the ſummer before; the height of an object uſed on Avaſaxa, in taking the angle formed by Cuitaperi and Horalakero, had not been obſerved. The deſire which actuated us, that nothing ſhould be wanting in our work, impelled us to be ſcrupulouſly exact. I undertook to aſcend Avaſaxa with a quadrant. Figure to yourſelf a very lofty mountain full of rocks, hid by a prodigious quantity of ſnow, and the cavities made by which, alike concealed, threaten the adventurer who ſhould attempt to aſcend it with deſtruction; it will be deemed impracticable; nevertheleſs there are two modes of effecting it, the one, by walking or rather ſliding on two narrow planks of eight feet long, as the Fins and Laplanders do, in order to prevent their ſinking into the ſnow, a cuſtom that requires a long practice; the other by truſting to the rein-deer who are able to make ſuch a journey.

Theſe animals are not able to draw any other than a very ſmall boat, into which the half of the body of a man can with difficulty enter: this boat, deſigned for travelling through the ſnow, in order to find the leaſt reſiſtance from it, in cutting it with its prow, and ſliding over, is faſhioned the ſame as boats uſed at ſea, that is to ſay, with a pointed prow and a ſharp keel below, which cauſes it to roll and overturn continually, unleſs he who is within, be careful in preſerving a balance. The boat is faſtened by a thong of leather to the breaſt of the rein-deer, who, if upon a beaten and firm track, runs with fury. However deſirous of ſtopping him, you pull in vain at a kind of bridle faſtened to his horns; intractable as he is, it cauſes him only to change his road, ſometimes even he comes back to be revenged by kicking you. On ſuch occaſions the Laplanders turn the boat over them, making it ſerve as a ſhield againſt the rage of the animal. For our part, little able to employ ſuch a remedy, we ſhould have been killed before we could have ſhielded ourſelves. Our only defence was a little ſtick that was put in our hand with which we had to ſteer as with a rudder, and ſhun the trunks of trees. Thus truſting to the rein-deer it was that I aſcended Avaſaxa, in company with M. L'Abbé Outhier, two Laplanders, one Lapland woman, and Mr. Brunnius their rector.

The firſt part of the voyage was completed in an inſtant, there was a hard beaten road leading from the houſe of the rector to the foot of the mountain, which we paſſed over with a ſwiftneſs comparable only to the flight of a bird. Although the mountain, on which there was no road, delayed the progreſs of the rein-deer, they drew us to the top, and we completed immediately the obſervation, the object of our journey. In the interval our rein-deer had dug deep holes in the ſnow, where they grazed the moſs with which the rocks of this mountain are covered; and our Laplanders having kindled a great fire, we approached it to warm ourſelves. The cold was ſo ſevere that the heat had no power to extend itſelf the ſhorteſt diſtance; if in ſuch places as the fire immediately touched the ſnow it melted, it froze again all round it, and formed a hedge of ice.

If our trouble were great in aſcending Avaſaxa, our fear of returning too quick over a craggy mountain, was not leſs; expoſed in carriages which always ſlided, even while ſunk into the ſnow; and drawn by aminals which excited our apprehenſions even on the plains, and which, notwithſtanding they ſunk to their bellies, extricated themſelves

by the velocity of their courſe. We were ſhortly at the foot of Avaſaxa; and in a minute afterwards we had paſſed the great river, and were houſed.

The following day we finiſhed the meaſure of our baſe, and had no right, when we ſaw the preciſion that our level had afforded us, to regret the trouble which our meaſurement on a frozen river had cauſed. The difference found between the meaſurement of our two parties amounted to no more than four inches on a diſtance of 7406 toiſes, five feet; a preciſion which we could not expect, and which one ſhould almoſt fear to tell. Neither can it be conſidered as the reſult of chance, or compenſations for more conſiderable former differences; for this ſmall one almoſt wholly aroſe during the laſt day. Our two parties meaſured daily by the ſame number of toiſes, and on none did the difference of the two meaſurements exceed an inch which ſometimes one exceeded the other, and at other times the reverſe. This nicety, although due to the ice, and the extreme care we employed, ſhewed at the ſame time the exactneſs of the lengths of our rods: for the ſlighteſt inequality between the rods muſt on ſo conſiderable a diſtance have made a very ſenſible difference.

We had aſcertained the amplitude of our arc, and our figure being completed, waited for nothing but the length of the baſe to be fixed to the ſcale. We then found that the length of the arc of the meridian intercepted between the two parallels that cut our two obſervatories of Torneo and Kittis, was 55,023½ toiſes; that this length having for its amplitude 57′ 27″ the degree of the meridian under the polar circle was greater by nearly 1000 toiſes than what it ſhould be according to the computations of the book on *The Size and Figure of the Earth*. After this operation we haſtened to return to Torneo to endeavour to ſecure ourſelves from the latter rigour of winter.

The town of Torneo, when we arrived there, the thirtieth of December, offered a dreadful ſpectacle; its low houſes were ſunk in ſnow to the roof which would have excluded all light, if there had been any; but ſnow continually falling, or threatening to fall, ſcarcely ever allowed the ſun, the few minutes it was above the horizon about noon, to ſhew itſelf. The froſt was ſo ſharp in the month of January, that our thermometers of mercury, conſtructed by M. Reaumur, thoſe thermometers that we were ſurprized to ſee ſink to 14° below the freezing point at Paris in the great froſts of 1709, ſunk to 37° while thoſe of ſpirits of wine froze. On opening the door of a warm room the external air immediately converted into ſnow the vapour which was formed, making white whirlwinds: on going out the air ſeemed to tear the breaſt. We were continually warned of and threatened with an increaſe of cold, by the noiſe of the ſplitting of the wood, of which all the houſes are built. To behold the ſolitude which reigned in the ſtreets, one would conceive that all the inhabitants were dead. We frequently ſaw people who had been froſt bitten, and the inhabitants of ſo rude a climate frequently loſe a leg, or an arm. Cold, always rigid in this country, is ſometimes ſuddenly ſo ſharply increaſed as to deſtroy infallibly thoſe who may have the bad fortune to be expoſed to it. Sometimes ſtorms of ſnow ariſe even more dangerous, woe to him who in the country is ſurprized by ſuch, in vain would he ſtrive by his recollection of places, by trees he had marked, to find his way; he is blinded by the ſnow; if he makes a ſtop, he is ſwallowed up.

If the aſpect of the earth be horrible in theſe climates, the ſky affords the moſt beautiful ſpectacle. As ſoon as the nights grow dark, fires of a thouſand colours, and a thouſand various ſhapes lighten the ſky, ſeemingly to indemnify this country uſed to enjoy continual day for the abſence of the ſun which leaves it. Theſe fires in this country have no conſtant poſition, as in ſouthern parts; for although an arch of fixed light be frequently ſeen towards the north, they ſeem more commonly to occupy indifferently

ferently every part of the ſky. Sometimes they begin by forming a large ſcarf of clear and moving light, whoſe extremities reach to the horizon, and which rapidly traverſes the heavens with a motion reſembling the caſt of a fiſherman's net, preſerving in this motion very perceptibly a direction perpendicular to the meridian. Moſt frequently after theſe preludes, all the lights unite towards the zenith where they form the head of a kind of crown. Oftentimes arcs, ſimiliar to thoſe we ſee in France towards the north, are ſeen towards the ſouth, at times in the north and ſouth at once, their tops approaching while their extremities retire ſinking towards the horizon. I have ſeen ſome of theſe oppoſites whoſe ſummits nearly touched each other at the zenith; both one, and the other have frequently beyond them ſeveral concentric arcs. They have all of them their tops towards the ſouth, with however a trifling variation weſtward which did not appear to me to be conſtantly the ſame, and which at times is imperceptible. Some of theſe arcs, after appearing broadeſt upon the horizon, become narrower as they approach each other, and repreſent above more than half a great ellipſis: to deſcribe all the figures which theſe lights aſſume, and all the motions they make, would be an endleſs taſk. Their moſt ordinany motion is one which makes them reſemble curtains flying in the air; and by the ſhades of colours which they aſſume, one would take them to be of thoſe taffeties which are called flame coloured; ſometimes they carpet part of the heavens with ſcarlet. At Ofwer Torneo (one day,) it was the eighteenth of December, a ſight of this deſcription, in ſpite of my being accuſtomed to them, excited my aſtoniſhment. Towards the ſouth a wide region of the ſky was tinted with ſo lively a red, it ſeemed as though the whole conſtellation of Orion was tinged with blood; at firſt fixed, the light ſoon began to move, and after aſſuming other colours, ſuch as violet and blue, it formed a dome whoſe ſummit was very little diſtant from the zenith towards the ſouth-weſt; the brighteſt moon then ſhining took away nothing from the ſpectacle. I ſaw no more than two of theſe red lights which are rare in theſe countries; and where they are dreaded as portents of ſome great misfortune. Indeed, ſurveying theſe phenomena, one cannot be ſurpriſed that thoſe looking on them differently than with the eye of philoſophy, ſhould fancy them chariots of fire, fighting armies, or any other prodigious things.

We remained at Torneo, ſhut up in our rooms in a ſtate of inaction, until the month of March, when we began new undertakings.

The length of the arc we had meaſured, which differed ſo much from the computation of the book on the ſize and figure of the earth, aſtoniſhed us; and in ſpite of the inconteſtability of our operation, we reſolved to verify our work by the moſt rigorous proofs.

As to our triangles, all their angles had been ſo many times obſerved, and by ſo great a number of perſons who all agreed, that no room was left to doubt of the truth of that part of our work. It had even an advantage above any other former work of this nature: hitherto two angles only having been uſed, and the third computed, whereas all our angles had been obſerved, notwithſtanding the inconvenience it occaſioned by cauſing us to make ſeveral very diſagreeable procraſtinations of our reſidence on the tops of mountains.

Moreover, although only eight triangles were neceſſary to determine the diſtance between Torneo and Kittis, we obſerved ſeveral ſupernumerary angles, and our heptagon thereby afforded combinations or ſucceſſions of triangles without number.

Our work, at leaſt this part of it, had been done, we may ſay, a great many times over; all that was neceſſary therefore was to compare by calculation the lengths given by all theſe different ſucceſſions of triangles. We carried our patience ſo far as to

compute twelve of theſe, and in ſpite of ſome triangles improper for ſuch computations, from the ſmall angles they contained, we found the greateſt difference given in the diſtances between Kittis and Torneo did not exceed 54 toiſes in the wideſt of theſe combinations, and we fixed on two which we deemed preferable to the reſt, the difference between which was $4\frac{1}{2}$ toiſes, the mean of which we took to determine the length of our arc.

The ſmall difference between any of theſe reſults would have ſurprized us if we had not known how much time and care had been taken in obſerving our angles. Eight or nine triangles had coſt us ſixty-three days, and every angle had been ſo often taken, and by ſo many different obſervers, that the mean of all theſe obſervations could not fail to be very near the truth.

The ſmall number of our triangles enabled us to make a ſingular calculation, and which would ſhew the fulleſt extent of all the errors which the greateſt aukwardneſs and moſt complete misfortune, joined together, could poſſibly produce. We placed as a poſition that in all the triangles from the baſe, we had made an error of $20''$ in each of the two angles, and $40''$ in the third, and that all theſe errors were on the ſame ſide, and tended to diminiſh the length of our arc. And the reſult, allowing ſo ſtrange a poſition, was that $54\frac{1}{2}$ toiſes of error was the whole that it could occaſion.

The care with which we had meaſured the baſe left no apprehenſion on that ſcore. The agreement of a great number of intelligent perſons who ſeparately wrote the number of rods; and the repeating of this meaſurement, with only four inches of variance, made a certainty of correctneſs even more than ſufficient.

The reſt of our examination was therefore turned to the amplitude of our arc, and the little difference which we found in our obſervations either at Kittis or Torneo left us nothing to wiſh for of greater nicety.

There ſeemed, on noticing the ſolidity and the mode of conſtruction of our ſextant, and the precaution we uſed in tranſporting it, no room to fear that we had any ways deranged it. The limb, the teleſcope, and the centre of this inſtrument were of one piece, the threads in the focus of the object glaſs, were of ſilver, fixed by Mr. Graham in ſuch manner that no change of their poſition could happen, ſo that in ſpite of the effects of heat and cold, they remained equally extended. So that the inſtrument could no otherways be out of order than by its figure being altered and the teleſcope bent, but if a computation be made of the effects of ſuch a change, it will be ſeen that in order to cauſe an error of a ſecond in the amplitude of our arc, it muſt be ſo much bent as to be eaſily perceived. This inſtrument was tranſported from Kittis to Torneo by water in a very ſolid box: always ſome of us were with it, and on paſſing the cataracts it was carried by men.

Moreover, the poſition of the ſtar which we had obſerved, ſecured us againſt any flexion which one might apprehend could happen either to the radius or the teleſcope of theſe large inſtruments, when the ſtar to be obſerved ſhould be diſtant from the zenith, and the inſtrument ſhould be inclined to direct it to the ſtar. Their weight alone might make them bend, and the practice of obſerving a ſtar with the two different ſides of the inſtrument which may remedy other accidents would be of no avail in this inſtance: for if any flexion ſhould take place in the inſtrument while obſerving with its face towards the eaſt; on turning it towards the weſt there will be a new flexion in the oppoſite direction, and nearly equal; ſo that the line which anſwered with the zenith when the front of the inſtrument was turned towards the eaſt, will very poſſibly anſwer the ſame when turned towards the weſt; and yet the arc which meaſures the diſtance from the zenith be wrong. The diſtance of our ſtar from the zenith of Kittis

was

was not more than half a degree; conſequently there was no room for apprehending that our teleſcope in a poſition ſo nearly vertical ſhould have ſwerved in the ſmalleſt degree.

Although for all theſe reaſons we could not doubt of our amplitude being correct, we were deſirous of proving it ſo by experiment: and for this purpoſe we employed a proof of the moſt laborious deſcription, but beſt calculated to ſatisfy us as it would ſhew us at the ſame time the exactneſs of our inſtrument, and the preciſion which we might reckon upon in the arc we had taken.

This proof conſiſted in aſcertaining anew the amplitude of the ſame arc by another ſtar. We waited then for an opportunity to make ſucceeding obſervations of a ſtar, which in this country is difficult, ſince it ſeldom happens that three or four fine nights follow each other: and beginning on the ſeventeenth March 1737, to obſerve the ſtar *a* of the dragon from the ſame ſpot as before at Torneo, after taking three nice obſervations of the ſame ſtar, we departed to take correſponding ones at Kittis. On this occaſion our ſextant was conveyed on ſledges at a foot pace over the ſnow, the moſt eaſy mode of conveyance that can be imagined. Our ſecond ſtar paſſed even nearer to the zenith than the firſt, ſince it was no more than a quarter of a degree from the zenith of Torneo.

The meridian already traced in our obſervatory at Kittis enabled us to fix our ſextant in very little time, and on the fourth of April we then began our obſervations on *a*. We took three obſervations at Kittis as well, which, comparing with thoſe of Torneo, gave for our amplitude 57′ 30½″ which made no greater difference between this and our obſervation on 8 than 3½″, after making allowance for the obſervation of light.

And not admitting the theory of the abberration of light, the amplitude by the laſt obſerved ſtar did not differ a ſecond from that found by the firſt.

The argument of the two amplitudes with ſo very ſlight a difference, a difference which will even be ſhewn to be leſs than it now appears; this agreement afforded the moſt ſolid proof of the exactneſs of our inſtrument, and of the perfect preciſion of our obſervations.

Having thus repeated our work, we found that by a mean of the two amplitudes, the amplitude of the arc of the meridian between Torneo and Kittis, was, 57′ 28¾″ which compared with the length of that arc 55,023½ toiſes, gives for the degree which cuts the polar circle 57,437 toiſes, a greater length by 377 toiſes than that which was aſcertained by M. Picard between Paris and Amiens, which he made to be 57,060 toiſes. It is however neceſſary to remark that, as the aberration of the ſtars was not known in the time of M. Picard, he could make no allowance for it: if this be done for him, and the additional ones for the preceſſion of the equinox, and for refraction, which M. Picard omitted, be added thereto, the amplitude of his arc being 1° 23′ 6½″, and the length 78,850 toiſes, it will give for the degree 56,925 toiſes, and make it leſs than ours by 512 toiſes.

And were aberration not admitted, the amplitude of our arc would be 57′ 25″, which, compared with its length, would make the degree 57,497 toiſes; longer than the degree meaſured by M. Picard by 437 toiſes.

To conclude, our degree, allowing for aberration, varied 950 toiſes from what it ſhould have been according to the computation of M. Caſſini in his book of the Size and Figure of the Earth; and differs 1000 from it, if aberration be not allowed.

From which it is apparent that the earth is conſiderably flat towards the poles.

During our ſtay in the frozen zone, the froſt remained yet ſo ſevere, that on the ſeventh of April at five o'clock in the morning the thermometer ſunk to 20° below the freezing point, although every day at noon it roſe to from 2″ to 3° above it, thus changing as much between morning and evening as it does in common between the

greateſt heat and cold that are experienced at Paris; bringing into twelve hours an equality of viciſſitudes with what are felt by the inhabitants of the temperate zones in the ſpace of a year.

We choſe to ſcruple the meridional direction of our heptagon. This, as has been noticed before, had been determined upon Kittis, by a number of obſervations on the paſſage of the ſun over the verticals of Niemi and Pullingi; and it was not to be apprehended that our figure ſhould have received any alteration in its direction, ſeeing the ſmall number of triangles of which it conſiſted, and the cloſeneſs with which the ſum of the angles of our heptagon approached to 900°. Nevertheleſs we were inclined to make the trial of the direction at Torneo.

For this purpoſe a different method to that which had been uſed at Kittis was adopted; this conſiſted in obſerving the angle between the ſun when on the horizon, and ſome one of the ſignals, with the hour at which the angle was taken. The three obſervations that we made, gave for a mean of the direction by this proceſs, within 34″ of what we had determined by the obſervations from Kittis.

Every part of our work having thus been repeated, nothing remained but to examine the primitive conſtruction and diviſions of our ſextant. Although we had no ground to doubt its correctneſs, we undertook to try it in the interval between the time at which the weather would allow of our departure; and this trial, from its ſingularity, from its demonſtrating how much our inſtrument was to be relied upon, as well as to ſhew the means to be uſed for diſcovering its being out of order, if it ſhould be deſirous that I ſhould mention it.

On the fourth of May upon the ice of the river we meaſured a diſtance of 380 toiſes 1 foot 3 inches which was to ſerve as a radius. And upon meaſuring this twice over we found no variation. Two firm ſtakes with two ſights, in a line drawn perpendicularly at the extremity of this diſtance, were fixed; and having meaſured the diſtance between the centres of the two ſights, this diſtance was 36 toiſes, 6 inches, 6 lines $\frac{2}{3}$, which was to ſerve as a tangent.

The ſextant was placed horizontally in a room upon two firm ſtocks, ſupported by an arch in ſuch manner that its centre was exactly at the extremity of the radius of 380 toiſes, 1 foot, 3 inches; and five different obſervers having taken the angle between the two ſights, among whom the greateſt difference was not two ſeconds, the mean of which being taken, the angle between the two ſights was 5° 29′ 48″ 95. by calculation the angle ſhould have been 5° 29′ 50″, that is to ſay, it differed from the angle obſerved by $1'' \frac{1}{20}$.

It will no doubt be thought ſurpriſing, that a ſextant of 5° 29′ 56¼″, in a climate ſo temperate as that of London, and divided in a chamber which certainly was not cold, ſhould be found preciſely of the ſame angle at Torneo when we tried it. The parts of the ſextant were certainly contracted by the cold in this laſt experiment; but one's ſurprize will vaniſh on conſideration that the inſtrument being made wholly of the ſame matter, its parts would contract proportionally, and conſequently its figure remain the ſame, which was the caſe.

Having thus found ſuch a wonderful exactneſs in the whole arc of our ſextant, we wiſhed to know if the two degrees of its limb which we uſed the one for δ, the other for a were perfectly equal. M. Camus, whoſe ingenuity had already been ſo uſeful to us on ſeveral occaſions, procured us the means of making this compariſon with all poſſible exactitude; and having compared together our two degrees, the mean of the obſervations taken by five obſervers gave 1″ more for the degree of the limb uſed in taking δ than that uſed for a.

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We were ſurpriſed when we ſaw that this inequality between the two degrees tended to diminiſh the very trifling difference found between our two amplitudes, reducing it from $3\frac{1}{2}''$ to $2\frac{1}{2}''$; and it will be ſeen in the detail of the operations, that this difference between the two degrees of the limb, however ſmall, it may be accounted for by the means uſed to diſcover it.

Thus we verified, not only the total amplitude of our ſextant, but alſo different arcs, which we compared together; and this proof from arc to arc, joined to that of the total which we had made, ſatisfied us that nothing had been left to wiſh for beyond in the conſtruction of the inſtrument, and that ſo great a preciſion could not have been expected.

We did not know what elſe to imagine as neceſſary for the meaſurement of the degree of the meridian; for I ſhall not ſay any thing here of our experiments on gravity, a matter equally important, and which we treated with equal care. It will be ſufficient now to ſay, that if diſpoſed to follow the example of Meſſrs. Newton, Huygens, and ſome others, among whom I ſcarcely dare to name myſelf, one might be diſpoſed to compute the figure of the earth by gravity. Every experiment we made in the frozen zone will ſhew the earth to be flattened; which is confirmed alſo by what we learn of the experiments made by Meſſrs. Godin, Bouguer, and La Condamine on the torrid zone.

In the mean time the ſun drew nearer to us, or rather no longer left the horizon: it was a ſingular ſight to behold it ſo long illuminate a frozen horizon, to ſee the ſummer in the heavens, while rigid winter graſped the earth: we were then in the morning of that long day which laſts for ſeveral months; in the mean time it did not ſeem that the continued ſun cauſed any change in either ice or ſnow.

On the ſixth of May it began to rain, and ſome water was perceptible on the frozen river. Every day at noon the ſnow melted, and every night winter reſumed its ſway. At length, on the 10th of May, the earth was viſible, unſeen for ſuch a length of time: ſome elevated points, expoſed to the ſun, began to appear like the ſummits of the mountains after the flood, and ſoon after the birds, natural to the country, were ſeen again. Towards the beginning of June the ice gave up both land and ſea: we immediately turned our thoughts to our return to Stockholm, and departed the ninth of June, ſome by land and ſome by ſea; but the reſt of our adventures, or our ſhipwreck in the Gulf of Bothnia, do not belong to this ſubject.

ACCOUNT OF A JOURNEY TO THE EXTREMITY OF LAPLAND, FOR THE PURPOSE OF FINDING AN ANCIENT MONUMENT.

[By M. Maupertuis.]

WHILST we were at Pello, where the arc of the meridian which we had meaſured terminated, the Fins and Laplanders frequently ſpoke to us of a monument which they looked upon as the wonder of their country, and in which they conceived was contained the knowledge of every thing of which they were ignorant. This monument was reported to be ſituated from twenty-five to thirty leagues towards the north, in the middle of a vaſt foreſt, which ſeparates the gulf of Bothnia from the ocean.

To arrive there one is obliged to be drawn over the ſnow by rein-deer, in thoſe dangerous ſort of carriages called Pulkas, of which I already have given a deſcription in the account of our obſervations. Although it was the month of April, there was yet a riſk of being frozen in the deſerts, where there was no hope of finding an aſylum; and this riſk was to be undertook upon the aſſertions of Laplanders.

I am almoſt aſhamed to tell that I undertook it. The want of occupation during a ſtay which we were obliged to prolong in theſe countries till the ſeaſon for our depar-

ture; a diſpoſition from curioſity of penetrating to the centre of Lapland; the moſt ſlender hope of ſeeing the only monument of this deſcription perhaps extant in the world, with the habitude which we had of encountering hardſhips and danger; theſe perhaps may excuſe me. I reſolved then on going, and had the good fortune of being accompanied by M. Celſius, who to a moſt profound acquaintance with aſtronomy, joined a profound knowledge of the northern languages, and who had made a particular ſtudy of Runic inſcriptions, to which we thought this which was ſpoken of to us might have ſome relation.

It perhaps may be pleaſing to know the method uſed in travelling in Lapland. In the beginning of winter the roads conducting to frequented places are marked with branches of fir: ſcarcely have the ſledges and pulkas beaten the firſt ſnow which covers the road, and begun to hollow it, before a ſucceeding fall, driven by the wind, fills it, and brings it to a level with the ſurface of the country, lake, or river. The next carriages that paſs beat again the way which other falls of ſnow cover anew, and theſe roads alternately hollowed by carriages, and filled by the wind, that reduces every where the ſnow to a level; although not more raiſed than the circumjacent parts, form nevertheleſs cauſeways, or bridges of compreſſed ſnow, from which by varying to the right or left, one is engulphed by the ſnow. Great care is taken not to ſwerve from theſe roads, and moſtly towards the middle they are hollowed by a kind of furrow, made by the pulkas travelling over them; but in the midſt of foreſts and unfrequented places no ſuch roads exiſt. The Fins and Laplanders only find each other by marks cut on trees. Sometimes the rein-deer plunges up to the horns in ſnow, and in theſe places if overtaken by one of thoſe ſtorms, during which the ſnow falls in ſuch quantity, and driven by the wind on every ſide in ſuch manner, that it is impoſſible to ſee two ſteps from one, it would be impoſſible to find again the way paſſed over, or to purſue one's courſe; deſtruction muſt infallibly follow, and above all, if not provided with tents, as we were, to ſhelter us from part of the ſtorm.

While on our journey, our Laplanders, fruitful in wonderful ſtories, related to us on this ſubject many accounts of men who had been taken up into the air in theſe ſtorms, with their pulkas and their rein-deer, and precipitated ſometimes on rocks, at others into the middle of the lakes.

I left Pello the eleventh of April, 1737, and arrived in the evening at Kingis, which is twelve or fifteen French leagues diſtant. I did not ſtop there, being deſirous of getting to the place where rein-deer were to be provided for me as ſoon as poſſible; I therefore proceeded five leagues farther, and ſlept at Pellika: this is one of the houſes which forms the village of Payala. In theſe countries villages are compoſed of no more than two or three houſes, each ſome leagues diſtant from the other. I there found ſix rein-deer with their pulkas; but as we could yet go three leagues further in ſledges, I reſerved our horſes for the next day to carry us to Erckiheicki, to which place I ſent forward the rein-deer to wait for me.

In theſe unfortunate climates, inceſſantly burnt during the ſummer by the rays of the ſun, which never goes down, and afterwards during the winter wrapt in profound and continual night, one could not expect to meet with ſuch an agreeable aſylum as that we found. The houſe called Pellika, in ſpite of its remoteneſs from the inhabited world, was one of the beſt I had met with in the country; we ſtretched out ſkins of bears and rein-deer, on which we prepared ourſelves by taking a little reſt for the fatigues of our next day's journey.

Long before ſun-riſe I left Pellika on the twelfth of April, and ſoon arrived at Erckiheicki, where I ſtopped no longer than was neceſſary to leave our ſledges and get tied in our pulkas; a precaution without which, when the rein-deer is at its ſpeed, one ſhould

ſhould not long remain in the carriage. At this ſeaſon, however, our precautions againſt the rapidity of the rein-deer were ſuperfluous: they were no longer thoſe ungovernable deer which drew me laſt ſummer with ſuch ſwiftneſs over the river, and almoſt flew with me from the top of Avaſaxa. Their former ſmooth horns were now no other than white and dry bones, which one might miſtake for parched ribs of dead animals: their bones came through their ſkin, and they looked as though incapable of dragging us a hundred ſteps.

The difference of the ſeaſons was the cauſe of this change. When they drew me to Avaſaxa they came from Norway, where, during the ſummer, they had nothing elſe to do but to feed and get fat: at that period I would adviſe no one to travel in pulkas; but at the preſent ſeaſon, after having undergone all the toil of winter and returned from the Lapland fairs, we had nothing to fear from the rein-deer, unleſs it were to be left behind. If it be difficult to ſtop this animal when in its full ſtrength, at the time of his exhauſtion it is not leſs difficult to make him proceed.

We travelled thus dragged through a foreſt, having eight or nine leagues to go: there was no road which led to the ſpot we were going to, which made it ſo much the more laborious for the rein-deer; at every ſhort interval we were obliged to ſuffer them to reſt, and give them moſs which we had brought with us: this moſs is their only food. The Laplanders mixed it with ice and ſnow, and form very hard cakes of it, which ſerve at the ſame time as food and beverage for the animal, who gnaw it with avidity. In ſpite of this, we were under neceſſity of leaving a deer on the road: he was tied to a tree, and ſome of theſe cakes left beſide him.

We ourſelves were much incommoded by the uneaſy poſture which we were obliged to aſſume in theſe pulkas: the only amuſement afforded us during this tireſome journey was in noticing in the ſnow the footſteps of the different animals with which the foreſts are filled: we eaſily diſtinguiſhed the different ones, and ſaw with ſurpriſe the number of various animals which had paſſed in a very ſhort ſpace during a few days.

We ſaw on the road many ſnares laid for ermines, in ſome of which were priſoners. The Laplanders tie to a tree, whoſe top is cut off level with the height of the ſnow, a log of wood, covered by another ready to fall, beneath which a ſmall paſſage is left for the ermine, and which, upon its entering to eat the bait that is ſet for him, falls on and cruſhes him.

It is thus that ermines, which are very plentiful in Lapland, are ſnared: theſe animals are cinnamon-coloured in ſummer, having only the belly and tip of the ears white: we frequently met with ſuch on the banks of lakes and rivers, where I imagine they watch for fiſh, of which they are particularly fond; ſometimes even we have found them ſwimming in the middle of the water. In winter they become entirely white; which was the caſe of thoſe we found in the ſnares. However, upon leaving Torneo, a tame ermine that I had in the houſe had already loſt its white in many places; and on my return ſome days afterwards I found it perfectly grey. It is true, if it be the cold which, by any cauſe whatever, whitens them, thoſe which were expoſed to the air ſhould naturally remain longer white than thoſe ſhut up in a houſe: perhaps the ermines found by us had been caught ſome time; for as may be conceived, frozen animals are preſerved all the winter. In the packages of ermines ſold by the Laplanders, when the ſkins are turned inſide out, there are always a number of grey, or ſpotted with grey, which are not uſed for trimmings.

We arrived at Keyma, ſituated at the foot of a little mountain called Winſo, at one o'clock in the afternoon: we aſcended it, it was there we were to find the monument we were ſeeking, but it was covered with ſnow. Our Laplanders ſought for it without being

being able to find it, and I began to repent me of having undertaken ſo fatiguing a voyage upon ſuch ſuſpicious information, when after a long ſearch it was diſcovered: I cauſed part of the ſnow to be removed, and lighted a great fire for the purpoſe of melting the remainder, in order that we might examine this pretended wonder.

It is a ſtone of which a part of irregular form advances out of the earth to the height of a foot and a half, and is about three feet broad: one of its faces is tolerably even, and form a ſurface not altogether vertical, but which makes an acute angle with the horizon. On this face are two very ſtraight lines of characters, rather more than an inch long, and which are cut tolerably deep into the ſtone, like notches made by the ſtroke of an axe in wood, or a chiſel, being broad at the ſurface, and ending at the bottom with an acute angle.

At the bottom, and out of the two lines, are ſome larger characters; in ſpite of all the ſigns which theſe characters ſhew of having been engraved with iron, I dare not venture to affirm whether they be the work of man, or a ſport of nature.

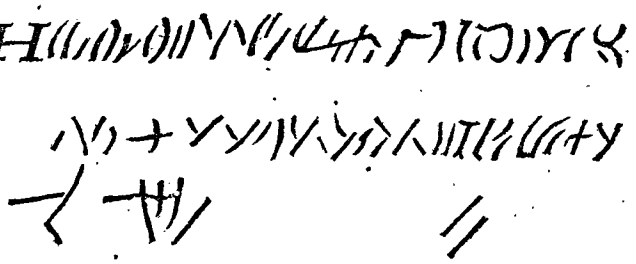
I leave to them who have made a longer ſtudy than myſelf of ancient monuments, or who may be more bold than me, to decide this queſtion. If the reſemblance of ſeveral of theſe characters, and even of many which ſucceed each other, appear to diſcountenance their being letters, I ſhould not therefore conclude that ſuch characters were without ſignification. If we mark one, eleven, one hundred and eleven, &c. in Arabic figures, it will readily be ſeen what different meaning may be made by the addition of a ſimilar character.

The moſt ancient inſcriptions of China are compoſed of no more than two characters, and one cannot doubt of theſe being the work of man, or of their containing a meaning ſhould they be no other, as ſome with much apparent reaſon imagine, than arithmetical works. If the tradition of the country be conſulted, all the Laplanders aſſure us that they are characters of great antiquity, containing valuable ſecrets; but what can one believe in regard to antiquity from thoſe people who even do not know their own age, and who for the greater part are ignorant who were their mothers.

M. Brunniers, their rector, ſpeaks of this monument, in a diſſertation that he has cauſed to be printed upon the town of Torneo and the neighbouring country: he looks upon it to be a Runic inſcription, and relates that there were formerly three crowns on it, effaced now by time. But M. Celſius, very well acquainted with the Runic, could not read theſe characters, and found them to differ from all the inſcriptions ſubſiſting in Sweden; and as for the crowns, if there ever were any, time has effaced them in ſuch a manner that no veſtige of them remains.

The ſtone on which theſe lines are engraved is compoſed of different beds; the characters are written on a ſpecies of flint, while the reſt, and above all between the two lines, ſeems to be of a ſtone more ſoft and foliated.

However it may be, M. Celſius and myſelf copied ſeparately, and with care, all that we could diſcern.



Should

Should it be no other than a ſport of nature, the reputation which the ſtone bears in this country deſerves that we ſhould have given the deſcription of it.

This ſtone does not certainly poſſeſs the beauty of the monuments of Greece or Rome; but if what is on it be an inſcription, it very poſſibly has the advantage of being the oldeſt in the univerſe. The country in which it is found is inhabited only by a race of men who live like beaſts in the foreſts: we cannot imagine that they can have ever had any memorable event to tranſmit to poſterity, nor if ever they had had, that they could ever have invented the means. Nor can it be conceived that this country, with its preſent aſpect, ever poſſeſſed more civilized inhabitants. The rigour of the climate, and the barrenneſs of the land, have deſtined it for the retreat of a few miſerable wretches who know no other.

It ſeems therefore that our inſcription muſt have been cut at a period when this country was ſituated in a different climate, and before ſome one of thoſe great revolutions which we cannot doubt have taken place in our globe. The poſition that its axis holds at preſent, with reſpect of the ecliptic, occaſions Lapland to receive the ſun's rays very obliquely; it is thereby condemned to a winter long and fatal to man, as well as to all the productions of nature, its land is barren and a deſart.

No great movement poſſibly in the heavens was neceſſary to cauſe all its misfortunes. Theſe regions may formerly have been thoſe on which the ſun ſhone moſt favourably: the polar circles may have been what now the tropics are, and the torrid zone have filled the place now occupied by the temperate. But how could the ſituation of the axis of the earth be changed? If attention be paid to the motion of the celeſtial bodies, but too many cauſes may be ſeen capable of producing this and even greater changes.

If the knowledge of anatomy, of all the parts and all the ſprings which cauſe the motion of our bodies, occaſions thoſe acquainted with it to wonder how the machine can poſſibly laſt ſo long, the ſame may be ſaid of aſtronomy. The knowledge of the celeſtial movements diſcovers to us many cauſes which could effect not only upon our earth, but on the general ſyſtem of the univerſe, material changes.

The variation in the obliquity of the ecliptic, which ſeveral aſtronomers conſider as demonſtrated by the obſervations of the ancients, compared with our own, might of itſelf, after a long lapſe of ages, have produced changes ſimilar to thoſe we ſpeak of. The obliquity at which the equator of the earth at preſent cuts the ecliptic, which at preſent is no more than $23\frac{1}{2}^{\circ}$, may poſſibly be the remainder of a much greater obliquity, during which the poles may have been in the temperate or the torrid zone, and have had the ſun at their zenith.

Whether there may have been ſuch changes, or more ſudden ones, it is certain there has been ſome. The print of [illegible] and fiſh themſelves petrified, which are found in countries moſt remote from the ſea, and even upon the ſummits of mountains, are inconteſtible proofs of theſe places having been formerly low and covered with water.

Sacred hiſtory teaches us that the waters formerly covered the higheſt mountains. Such an inundation it would be difficult to imagine, without the tranſpoſition of the centre of gravity of the earth, and of its climates.

If repugnant to the allowance of ſuch changes, the inſcription at Winſo may be conceived to owe its origin to ſome event as ſingular as our voyage. An inſcription which ſhould contain the hiſtory of the operation which we went to this country to effect, might in ſome future day perhaps be as obſcure as this is now; and if all the ſciences were to be loſt, who could then diſcover, who could imagine, that ſuch a monument had been the work of Frenchmen; and that what was cut thereon was the meaſurement of the degrees of the earth, and the ſolution of its figure.

I leave my reflections and the monument to the conjectures which may be entertained on them, and take up the thread of my relation. After we had copied what we found on the ſtone, we embarked in our pulkas to return to Erckiheicki. This journey was ſtill more fatiguing than it had been in the morning: the poſture in the pulkas is ſo very incommodious, that it gives the ſenſation of a broken back after a few hours; notwithſtanding we were ſo ſeated continually from four in the morning until one in the afternoon. Our return was ſtill longer; our deer ſtopped every minute, and the moſs we carried with us being all conſumed, we were obliged to ſeek ſome. When the ſnow is in powder, which is the caſe till ſpring, although it cover the earth entirely to a great depth, a rein deer digs himſelf a ſtable in a moment, and bruſhing away the ſnow on all ſides, diſcovers the moſs which is hid at the bottom. It is pretended that the animal has a particular inſtinct for finding the moſs ſo covered with ſnow, and that he is never deceived when he makes his hole; but the ſtate of the ſurface of ſnow hindered my aſcertaining whether this account be true or falſe. As ſoon as this ſurface has been thawed by the power of the ſun, the froſt which ſucceeds freezes it, and forms a cruſt ſufficiently hard to bear men, deer, and even horſes; but when ſo hardened, the rein-deer being unable to penetrate it, the Laplanders are obliged to break it; and this is the total of the returns which they make them for their ſervices.

Theſe rein-deer deſerve that we ſhould ſay ſomething of them: they are a kind of deer whoſe ſpreading horns branch out before the forehead; they ſeem deſigned by nature to ſatisfy all the wants of the Laplanders; they ſerve them inſtead of horſes, cows, and ſheep.

The rein-deer is faſtened to a ſmall boat, called a pulka, pointed before to cut through the ſnow, and a man in a poſture half-ſitting and half-lying in this carriage, may go with great ſpeed, provided he does not fear overturning, or being ingulphed in the ſnow. The fleſh of them is excellent to eat, either freſh or dried. The milk of the doe is rather ſharp, but as thick as the cream from cows' milk: it is capable when frozen of being preſerved for a long time, and the Laplanders make cheeſes of it, which however would be much better than they are, if more care and cleanlineſs were uſed in making them.

The ſkin of the deer ſerves for all ſorts of clothing: that of the young ones, covered with a yellowiſh hair, a little curly, forms a very ſoft lining for the cloaths of the Fins: when older, the hair becomes brown, when thoſe dreſſes are made of it ſo well known over Europe by the name of Lapmades; they are worn with the hair outwards, and are a very light and warm dreſs. The ſkin of the old deer is prepared in the ſame manner as that of bucks and does, and makes excellent gloves, the fineſt waiſtcoats, and moſt handſome girdles. The Laplanders make the nerves and guts, by twiſting them into thread, which is the only kind they uſe. To conclude, that every part of them may be ſerviceable, they offer their horns in ſacrifice to their deities.

Being returned from Pellika, after having experienced much fatigue, cold, and tireſomeneſs, we left it again on the thirteenth, early in the morning, and arrived by nine o'clock at Kingis.

This place, although a wretched one, is rather more known than the others, by the iron forges in it: the ore is brought there during the winter by rein-deer, from the mines of Juneſvando and Swappawara. Theſe forges are worked only for a ſhort part of the winter, the extreme froſt not allowing the wheels to act upon the bellows and hammers. Kingis is ſituated on a branch of the river Torneo, which has a dreadful cataract before it, impaſſable for boats. The maſſes of ice and foam precipitated with violence, and forming a caſcade, the edges of which appeared like cryſtal, formed a moſt noble ſpectacle. After

dining with the clergyman at Kingis, M. Antilius, we left it, and arrived in the evening at Pello, where we ſlept in the ſame houſe that we had reſided in ſo much, and which we beheld very likely the laſt time.

Proceeding from Kengis we met upon the river ſeveral caravans of Laplanders carrying ſkins and fiſh to Pello, which they had been bartering for at the fairs of Upper Lapland with the merchants of Torneo. Theſe caravans formed long files of pulkas: the firſt rein-deer, who is guided by a Laplander on foot, draws the firſt pulka, to which the ſecond rein-deer is faſtened; and in like manner the remainder, to the number of thirty or forty, who every one follow exactly in the little furrow traced in the ſnow by the firſt, and deepened by all the reſt. When they are tired, and the Laplanders have pitched on a ſpot where they mean to encamp, they form, with the deer faſtened to their pulkas, a large circle: every one makes his bed in the ſnow on the middle of the river, and the Laplanders diſtribute moſs among them: they themſelves are little more difficult in their accommodation; many are ſatisfied with lighting a fire, and ly on the river, while their wives and children fetch from their pulkas ſome fiſh for their ſupper; others erect a kind of tent, a receptacle worthy of a Laplander, being no other than miſerable rags of a coarſe woollen cloth, rendered by ſmoke as black as if it had been dyed; it is faſtened round certain ſtakes, which form a cone, with an opening at the top which ſerves for a chimney. There the moſt voluptuous, ſtretched on bear and rein-deer ſkins, paſs their time in ſmoking tobacco, and looking with contempt on the occupations of the reſt of men.

Theſe people have no other dwellings than tents: all their wealth conſiſts in their deer, which live on nothing but a moſs that is not every where to be found. When their herd has ſtripped the ſummit of one mountain, they are obliged to conduct them to another, thus obliged to live continually wandering in the deſarts. Their foreſt, dreadful in winter, is even leſs fit for living in in ſummer: an innumerous ſwarm of flies of every deſcription infect the air; they follow men by the ſmell from a great diſtance, and form around every one who ſtops an atmoſphere ſo thick as to exclude the light. To avoid them it is neceſſary to be continually moving without reſt, or to burn green trees, which cauſes a thick ſmoke, and drives them away by its becoming inſupportable, as it is almoſt to man himſelf: and laſtly, they are ſometimes obliged to cover their ſkin with the pitch that exudes from the firs. Theſe flies ſting ſharply, or rather many of them frequently occaſion real wounds, from which the blood flows abundantly.

During the time that theſe inſects are moſt violent, that is to ſay, in the two months which we paſſed in forming our triangles in the foreſt, the Laplanders fly to the coaſts of the ocean with their rein-deer to get free from them.

I have not yet ſpoken of the appearance or ſize of the Laplanders, of which ſo many fables have been related. Their diminutiveneſs has been greatly exaggerated; it is impoſſible to exaggerate on their uglineſs. The rigour and length of a winter, againſt which they have no other ſhelter than what the wretched tents afford which I have deſcribed, in which they make a blazing fire, which ſcorches them on one ſide, while they are frozen on the other: a ſhort ſummer, but during which they are inceſſantly burnt by the rays of the ſun; the barrenneſs of the ground, which produces neither grain, nor fruit, nor pulſe, ſeem to have cauſed a degeneration of the human race in theſe climates. As to their ſize, they are ſhorter than other men, although not ſo much ſo as ſome travellers have related, who make pygmies of them. Out of a great number of men and women that I ſaw, I meaſured a woman apparently of twenty-five or thirty years of age, and who ſuckled an infant which ſhe carried in the bark of a birch-tree:

ſhe ſeemed to be in good health, and well proportioned, according to the idea I formed of the proportions of their ſtature; ſhe was four feet two inches five parts high, and certainly ſhe was one of the ſmalleſt I met with, yet without appearing from her diminutiveneſs either deformed or extraordinary in that country. People may have deceived themſelves as to the ſtature, or large heads of Laplanders, who have not made the obſervations which I did, in ſpite of the general ignorance of their ages that prevails among them. Children, who from their tendereſt youth have their features diſfigured, and frequently the appearance of little old men, begin very early to conduct their pulkas, and to follow the ſame labours as their fathers. I ſuſpect the greater part of travellers have formed their judgment of the ſize of Laplanders, and of the largeneſs of their heads, from thoſe of the children; and I myſelf have frequently been nearly deceived in this point. I do not mean to deny that Laplanders are ſhorter than other men for the greater part; but that I eſteem their ſhortneſs to have been ſtated as too great in the relations of travellers, owing to the error I have mentioned, or poſſibly to that inclination towards the marvellous which is ſo predominant. To me there ſeems to be a head difference between us and them, which is a great deal.

A country immediately contiguous to Lapland produced a real wonder, of an oppoſite deſcription. The giant exhibited at Paris in 1735, was born in a village but little diſtant from Torneo. The academy of ſciences having cauſed him to be meaſured, found him to be ſix feet eight inches eight lines in height. This Coloſſus was made up of matter ſufficient to have formed four or five Laplanders.

JOURNAL OF A VOYAGE TO THE NORTH IN THE YEARS, 1736 and 1737.

[By M. OUTHIER. Newly tranſlated from the Original. Paris, 1744, 4to.]

IS the earth lengthened or oblate at the poles? This is the famous queſtion ſo long agitated among the learned, which neither the ingenious ſyſtems conceived by different perſons, nor geometrical and aſtronomical obſervations up to 1735, have been ſufficient to decide.

The beſt mode of terminating the diſpute, was to meaſure under the equator, and at the polar circle, one or more degrees of the meridian, by trigonometrical and aſtronomical obſervations of the exacteſt nicety.

M. Le Comte de Maurepas always buſied in contributing to the advancement of the ſciences, and the welfare of commerce and the ſtate, obtained for the gentlemen of the academy of ſciences all the aſſiſtance neceſſary from his Majeſty, towards making obſervations; the reſult of which was important as well to the perfection of the ſciences, as the greater ſecurity of navigation.

The academy received the orders of his Majeſty; all the neceſſary inſtruments were conſtructed. Although at that time France had to ſuſtain a war of magnitude, no expence was ſpared: ſeveral members of the academy ſet off in the month of May 1735, for Peru under the equator; M. de Maupertuis offered himſelf for the voyage to the polar circle. Its length, the exceſſive fatigue incident thereon, the riſks he had to run; nothing leſſened his zeal: Meſſrs. Clairaut, Le Monnier, and Camus, of the academy, were aſſociated with him; he did me alſo the honour to aſk for me to accompany him.

Although before-hand prejudiced againſt the northern climates, I left immediately, and without heſitation, the agreeable ſociety of the Lord Biſhop of Bayeux, with whom I was, to join him. We were not to leave Paris before April 1736; nevertheleſs I went there in the beginning of December 1735: M. Celſius, profeſſor of aſtronomy at Upſal, was to join us on the road. M. de Maupertuis requeſted as well of M. Le Comte de Maurepas, to have M. Sommereux for ſecretary, and M. d'Herbelot as draughtſman.

The four or five months preceding our departure, were paſſed in overlooking the conſtruction of the inſtruments which we required, and in providing whatever might be uſeful to us on our voyage: We made alſo upon the ſimple pendulum many obſervations, the correſponding ones to which we were to make at the polar circle. It was there that M. de Maupertuis had reſolved to go, to make his experiments for aſcertaining the figure of the earth; but for a long while he was undetermined, whether it ſhould be in Iceland, on the coaſts of Norway, or towards the bottom of the Gulph of Bothnia. The beſt maps have a great number of iſlands deſcribed along the coaſts of this gulph, which promiſed to be advantageous to the work to be effected, in conſequence M. de Maupertuis gave it the preference; and requeſted of M. Le Comte de Maurepas, to obtain the orders of his Majeſty, the neceſſary recommendations, and to cauſe advice to be ſent to Sweden.

The anſwer was ſo ſooner received than we immediately prepared for our departure. All the inſtruments were ready and packed with care. The carrier which conveyed them, was accompanied as far as Dunkirk, by a ſervant which M. de Maupertuis took with him; he as well had four others, one of whom had before been at Stockholm, and underſtood the Swediſh language. As ſoon as the day of our departure was ſettled,

we took all the places of the St. Omer's poſt coach, for Friday, twentieth of April 1736.

We ſet off, Meſſrs. de Maupertuis, Clairaut, and Camus, of the academy of ſciences, Meſſieurs Sommereux, Herbelot, and myſelf, by the poſt coach on Friday the twentieth of April, with four ſervants. M. Le Monnier who had been detained by buſineſs, followed in a ſeparate carriage, and overtook us before we arrived at Louvre, where we dined with Meſſrs. Nicoli and Hellot, of the academy of ſciences, who accompanied us ſo far; we paſſed by Senlis, and arrived to ſleep at Pont St. Maxence. On Saturday the twenty-firſt we dined at Gournay, where there is a fine caſtle, with canals and beautiful fountains; and ſlept at a ſmall town, called Roye. On Sunday the twenty-ſecond we dined at Myaucour, and ſlept at Perenne. It is a pretty town; the ramparts, moſtly of turf, form agreeable promenades; the town, ſurrounded by a great deal of water, and marſhy lands. Monday the twenty-third, we dined at Bapaume, and ſlept at Arras: we arrived there early, and went to ſee the abbey of St. Vaaſt, its library, and treaſury; in which was ſhewn to us a thorn of the holy crown, and a bit of the ſponge.

Tueſday the twenty-fourth, we dined at Souchet, and ſlept at Bethune, a very handſome town with good fortifications. Wedneſday the twenty-fifth, we dined at Aire, and ſlept at St. Omer's, both theſe towns are handſome, large, and have very clean ſtreets. At St. Omer's we ſaw the abbey of St. Bertin and its church, in it on the ſummit of a pillar are the toad and lizard, the hiſtory of which is known to every one.

Thurſday morning the twenty-ſixth we embarked on the canal in a very pretty boat; we dined at Bourbourg, and continued our route in the ſame boat to Dunkirk. We made a quick paſſage, with ſails ſet all the way, and a favourable wind. Near Dunkirk we found on the banks of the canal, Dr. Lythenius, a Swediſh phyſician who came to France with M. Le Comte de Chronihelm, a Swediſh nobleman; M. Le Comte de Maurepas had directed that they ſhould both accompany us to Stockolm; he alſo ordered M. De la Haye d'Anglemont, commiſſary of the marine at Dunkirk, to get ready a veſſel for us, and ſtore it with every thing needful.

As ſoon as we arrived, we went to ſee the veſſel which was to take us to Stockholm; it was ſmall but ſafe, and abundantly provided with every thing neceſſary. M. d'Anglemont had taken a lodging for us at Dunkirk. Friday the twenty-ſeventh, we dined at his houſe in company with Meſſrs. de Janſac, and d'Alembon. Sunday evening the twenty-ninth, while we were at ſupper, M. Celſius arrived from London; he had ſeen M. de Maupertuis at Paris, and had taken upon himſelf to cauſe ſome inſtruments to be conſtructed in England, which were of material ſervice afterwards.

On Wedneſday the ſecond of May, Meſſrs. de Maupertuis, Clairaut, Camus, Le Monnier, Celſius, Sommereux, Herbelot, and myſelf, accompanied by M. Le Comte de Chronihelm, and Dr. Lythenius, embarked at Dunkirk, on board the Prudent, commanded by captain Francis Bernard, and piloted by Adam Guenſtelik.

The whole of the ſhip's complement was four men and a boy. We had five ſervants brought from Paris, and a cook which M. d'Anglemont provided us with.

We weighed anchor, and ſailed at half paſt five in the morning; M. de la Haye d'Anglemont accompanied us for the ſpace of half a league.

Although the ſea was not much agitated, it was not long before we were almoſt all attacked by the ſea-ſickneſs; and I was worſe than any. As the veſſel was ſmall, our beds were between decks, which was only three feet high; the hatchway ſerved both for door and window.

On

On Thurſday the third, we were all very well. M. Celſius had brought a ſmall quadrant from England of a new conſtruction, for taking elevations at ſea; we tried it, and on the following days made uſe of it. We ſtudied and calculated. M. de Maupertuis amuſed us with his livelineſs, and the charms of his converſation.

On Friday, the fourth, we ſaw a little greenfinch among the yards, it flew ſometimes to the edges of the deck, at others amid the rigging, following us until the eighth of the month, after which we ſaw it no longer.

There came alſo a great bird, ſimilar to a buzzard, which perched on our main-maſt to reſt itſelf; it came from the Eaſt, and after half an hour flew away towards the Weſt.

We took an obſervation with the Engliſh inſtrument at noon, and found the latitude 54° 34′.

The captain and the pilot with the foreſtaff found it 54° 36′.

At the beginning of the evening we ſaw a fine aurora borealis. The pilot remarked that it preſaged a tempeſt.

Saturday, the fifth, the weather became ſqually, and I was very ſick.

We obſerved again the height of the ſun with our Engliſh inſtrument, and found our latitude within a minute of our computation by the log.

When the weather was fine, although it was windy; (as was almoſt always the caſe) we dined on the deck: it was ſometimes ſo much inclined that we were frequently near overſetting, diſhes and all, which created ſome little confuſion at our meals.

All day, Sunday, the ſixth, the weather has been rather ſqually; I have been continually ſick and unable to eat any thing.

A wave broke, and nearly covered the deck: the captain ordered us to make haſte into the cabin.

Monday, the ſeventh, which was Rogation Monday, the ſea was very much ſwelled. The night very dark. The ſea entirely covered with ſparks of light. We hoiſted up water in a pail, and agitating it with the hand, we diſtinguiſhed a number of ſimilar ſparks, which followed the motion of the water, and for the moſt part ſunk to the bottom of the bucket.

A Norwegian ſhip, large, and of a bad appearance, as well as its ſailors on the deck, purſued us in an inſolent manner aſtern, and going faſter than us, would have run us down, had we not ſteered out of its way.

Thurſday the tenth, (Aſcenſion Day,) very bad weather, we went at a great rate all on one ſide, from Skayen, very nearly to the Sound. The pilot has not loſt ſight all day long, of a veſſel which went before us, and has followed its track. Kept all day on deck, not being able to bear ſhutting up; was obliged to hold by the rigging on the upper part of the deck. Were ſo much inclined that the gunwale was frequently under water.

At night fall the captain and pilot much embarraſſed, afraid to enter the ſtrait, and equally fearful of keeping out at ſea, leſt we ſhould be driven by the winds on the coaſts. We reefed all ſails, and paſt a moſt horrid night, rolling dreadfully and continually. All the things in our lockers ſtruck, and rolled againſt each other. This ſituation appeared the more dreadful to us from its being new; M. de Maupertuis kept all his preſence of mind, and encouraged us by his ſerenity, and the livelineſs of his wit.

At length on the eleventh, by two in the morning at dawn of day we ſet ſail, entered the ſtrait, and anchored before Elſineur. Meſſrs. Le Monnier and Celſius diſembarked to proceed by land to Stockholm: Meſſrs. Chronihelm and Lythenius, went on ſhore as well to proceed to Gottenburg: Meſſrs. de Maupertuis, and Camus accompanied the captain to Elſineur to make their declaration. Theſe gentlemen learned of M.

Ans,

Ans, the French conſul, that our's was the firſt French ſhip which had paſſed this year. Meſſrs. de Maupertuis and Camus, on their return at five in the evening, ſaid that when they firſt landed, it was with great difficulty they could keep on their legs.

Elſineur is a little town almoſt wholly of wood; the view of the ſtrait from it, is very pleaſing. There is a handſome caſtle with guns, under which one is obliged to paſs; it is a fine coaſt covered with verdure, and trees. The Swediſh coaſt on the north is more dry and barren. Helſinborg is ſeen upon it with a large tower, and terrace, covered with cannon.

Saturday morning, the twelfth, we paſſed the S. W. ſide of the iſland of Huane, formerly the reſidence of Tycho Brahe. Where his obſervatory was ſituated, there is no longer any thing remaining but a ſmall houſe.

The coaſts of Sweden and Denmark were entirely covered with ſnow, which fell in the night.

The night being very dark we drew water in a bucket, but however much we diſturbed it, it yielded no ſparks: we diſcovered as well that the water of the Baltic contained very little ſalt.

On Monday, the fourteenth, from eleven o'clock till noon, a halo round the ſun was ſeen; its radius from the center of the ſun to its interior circumference was 21° 30′, and to its exterior circumference 22° 30′. The external edge of the circle was confuſed, but the internal edge was diſtinctly marked, at leaſt towards the zenith and the horizon.

The ſame day I took an elevation at noon, and found the latitude 55° 40′. The pilot found it no more than 55° 30′.

Tueſday, the fifteenth, the ſea was much ſwollen, although there was little wind; we were obliged to ſteer as near to it as poſſible: the veſſel pitched dreadfully.

The ſeventeenth, a Swediſh boat requeſted to accompany us; but had great difficulty to keep up with us. As it was rather diſtant behind, M. de Maupertuis deſired our captain to back ſails, and invite the maſter to dine with us. Our captain made a tack: this manœuvre is extremely ſimple; by moving the rudder the veſſel makes a ſmall half circle, which is deſcribed on the water; he then lowered ſails and waited.

The maſter of the Swediſh brigantine thanked us.

Another Swediſh veſſel which we ſpoke, accompanied us to Dalheron.

At eleven o'clock, ſaw an aurora borealis, notwithſtanding a clear moon light.

On the nineteenth ſaw the tower of Langſoort, ſituated on a point of land: the tower the fartheſt advanced, is about 6000 toiſes more towards the South, than the place where we took an elevation at noon: found the latitude 59° 15′.

Our paſſage for the laſt four days delightful; night and day we made a league an hour without feeling the leaſt motion.

Dalheron is a large village, divided in two; on the rocks on both ſides the paſſage; its houſes, extremely ſmall, of wood painted red, with their white chimnies, and their little glazed windows, offered a very pleaſing ſpectacle.

Near to Dalheron is a very handſome country houſe on the ſhore. As for the reſt, the country on both ſides the Lidt, or bed of the river, (which is rather an arm of the ſea,) is frightful, being nothing but rocks extremely arid, with a few very ſmall firs.

Sunday, the twentieth, (Whitſunday,) we followed the Swediſh galliot, and another ſmall veſſel. I ſaid maſs, and at the communion the pilot thundered out *Domine, ſalvum fac regem noſtrum Ludovicum*, in which he was joined by all the aſſembly. No night; at midnight, I read in a book of very ſmall letters.

We paſſed by a ſmall village called Lindal, and near to Ouxyoup, where there is a caſtle a mile farther on. We entered a very narrow ſtrait, the current in which was rapid; the ſailors went on ſhore to draw the veſſel through with ropes. We made a half circle round a rock, and found ourſelves before the caſtle of Vaxholm, where M. de Maupertuis went to ſhew his paſſports to the governor, who ſpoke French. We paſſed between the caſtle and the village, which is ſtill more charming than that of Dalheron. This village of Vaxholm is placed on a rock, forming a promontory oppoſite the caſtle of Vaxholm.

At night as the veſſel made but little way, M. Camus and myſelf got into the yawl belonging to the Swediſh pilot, and rowed out of curioſity to ſome houſes on the banks; we had ſome difficulty in regaining the ſhip.

Monday, the twenty-firſt, at half paſt three, we entered the port of Stockholm: we ſaluted with three pieces of cannon; other veſſels arriving ſaluted as well: to which a fort, or neighbouring caſtle, anſwered ſeveral times.

The viſiting of the veſſel being over, we landed at nine o'clock, and met with Meſſrs. Monnier and Celſius. I went with Meſſrs. de Maupertuis and Camus to M. de Caſteja's, the French ambaſſador: I ſaid the maſs of Whit-Monday there. Such it was in France; but here, with the Catholics as well as Lutherans, it was the Monday after the third Sunday from Eaſter, they having kept Eaſter five weeks later than us.

The proteſtants in Sweden have not received the new calendar of Pope Gregory Thirteenth. Contrary to rule, they not only keep Eaſter the ſecond full moon after the equinoctial day, but on the ſecond Sunday after the ſecond full moon. Notwithſtanding the Catholics conform themſelves to the cuſtom and ſtile of the country, in order to prevent confuſion in the commerce of civil life. The almoner of his excellency the ambaſſador informed me that they were authoriſed ſo to do by a bull of the Pope.

We had ſome employment while we remained in this city: firſt, our baggage was to be examined at the cuſtom-houſe: we had reaſon to be pleaſed with the cuſtom-houſe officers, they for the moſt part accepted as enough the declaration which we made; ſatisfied that they might rely upon its truth, they took pains in forwarding us immediately on our arrival.

Every one of us did what he could: M. de Maupertuis was every where; he ſettled with bankers for our receiving what money might be neceſſary; he looked out for recommendations for the country to which we were going, and means for tranſporting thither both ourſelves and luggage: in a word, he provided like a father of a family for the neceſſities of a large party, that he was going to eſtabliſh in an unknown country, for an indeterminate time.

M. Le Comte de Caſteja, ambaſſador of France at Stockholm, was exceedingly obliging towards us, and obtained for us every comfort that we could deſire. He told us if he had had room enough he would not have ſuffered us to remain in an inn; and M. de Maupertuis in particular he ſo ſtrongly ſolicited to take a room at his houſe, that he could not deny him.

Wedneſday, the twenty-third, H. E. the ambaſſador preſented us to the King of Sweden; after which we dined with H. E., and in the afternoon were preſented to the Queen, having the honour again of paying our court to his majeſty: he ſhewed us much kindneſs, and ſpoke to all of us in very good French: he told M. de Maupertuis that we were about to undertake a dreadful voyage; that although he had been in many bloody battles, he would prefer the moſt deſperate of them to undertaking ſuch a voyage as we were about to do; that it was however a game country. He preſented M. de Maupertuis with a fowling-piece, which he ſaid he had uſed himſelf for a long time.

Saturday,

Saturday, the twenty-ſixth, after dining with the ambaſſador, we went to ſee a ſhip launched: afterwards the abbot Hennegan, one of the almoners of the embaſſy, accompanied me to ſee the churches of St. Catherine and St. Nicholas, which are tolerably handſome.

Sunday, the twenty-ſeventh, he conducted me and M. de Maupertuis to the church of St. Claire, to ſee the Lutheran office performed. The officiator had a chaſuble, at the back of which was a crucifix embroidered in ſilver: they ſang in the Swediſh language the Gloria in Excelſis, Credo, Sanctus, and the Pater Noſter: ſeveral perſons received the communion, and returned very devoutly, apparently with great ſelf-ſatisfaction. Their ſinging, accompanied by the organ, appeared to me very fine. During the ſermon a beadle carried a long cane, with which he hit the heads of ſuch as were aſleep; it is his office as well, in a large purſe, which he advances into the crowd at the end of a long cane, to collect the alms for the church.

Another day we went to the Greek office of the Muſcovite ſchiſmatics, in a chapel which they are allowed to hold at Stockholm. The congregation conſiſted of not more than a dozen or fifteen perſons, among which was a young man who ſpoke French very well; he cauſed us to enter the ſanctuary which is cloſed. In entering the chapel they make a number of reverences to the holy images, and the reſt of the congregation, and after every bow a ſign of the croſs. There is always a good fire in chafing-diſhes: the officiating prieſt frequently throws in incenſe; he makes uſe of warm water to mix with the wine in the chalice. Their ſinging is very ſingular; they repeat with quickneſs certain words, but ſo quickly as to be almoſt out of breath, as if we were to repeat over and over Deo gratias, Deo gratias, Deo gratias. Their ceremonies are performed in a ſloyenly manner: the prieſt blows his noſe occaſionally through his fingers; in other reſpects they have a very devout appearance.

The twenty-ninth I went with the abbot Hennegan to ſee the King's library. M. Benkſilius, the librarian, ſhewed us whatever there was curious: he made me a preſent of a Lapland manual, which is a prayer-book in the Lapland tongue, telling me I ſhould be the patriarch of the Laplanders.

The thirty-firſt we went to the office for geographical maps. There are ſeveral perſons who are employed in arranging the geography of that country: during the winter they meaſure over the ice; and in the ſummer they digeſt their meaſurements, and draw their maps with much order and exactneſs. The King of Sweden had the goodneſs to order them in the office to give us drafts of the coaſts of the Gulf of Bothnia, where we relied on making our experiments. In conſequence, a beautiful draft of the weſtern ſide was preſented to us, which we carried with us: there was not before our departure ſufficient time to complete the eaſtern ſide, but it was ſent to us ſome days after.

We went the ſame day to ſee the King's garden, where we ſaw in green-houſes orange-trees, with oranges on them. We had before noticed in other gardens ivy, ſuch as creeps on our walls, planted in pots, and which appeared to be highly eſteemed.

We then went to Carlſberg, a royal palace, and to Ulrikſdale, another, where there is a tolerably large park with plenty of game.

THE CITY OF STOCKHOLM.

Stockholm is a fine and large city; all the houſes of the city, and part of thoſe of the ſuburbs, are of ſtone, well built, and four or five ſtories high: the other part of the houſes in the ſuburbs are of wood; they are built with ſquare beams placed horizontally, laid one upon the other, their extremities croſſing at the angles of every apartment

which they make. Theſe houſes are painted in red, not only for neatneſs' ſake, but alſo to preſerve them: above the timber-work planks are nailed, which are covered with birch-bark firſt, and afterwards with turf or earth. Many of the ſtone-houſes are covered with iron plates, or wrought iron; ſome are covered with copper, others with ridge tiles. To ſome of their windows they have Venetian blinds, which move on a pivot ſo as to increaſe or diminiſh light at pleaſure.

Every night after ten o'clock a number of men parade the ſtreets, crying or rather ſinging the hour, and afterwards a kind of prayer; they watch as well to prevent any noiſe or diſorder during the night: they are armed with a ſtaff, at the end of which is a machine with ſprings; the uſe of it to ſeize by the neck or the leg thoſe whom they are deſirous of ſtopping, or who inſult them, and it is impoſſible to get looſe from it.

While we were at Stockholm a fine palace for the King was being conſtructed. There are in the town many handſome and large churches; that of St. Catherine is perfectly new, and built with a dome, the great altar of it is very handſome: I noticed there a painting of the Purification of the Virgin, very well executed. On one ſide of the altar is Hope holding an anchor; on the other, Religion holding a croſs and a chalice. They have in almoſt all their churches a very handſome pulpit, with an hour-glaſs.

* In the great church of St. Nicholas, cloſe to the King's caſtle, there is a large painting of the Judgment, thirty-three feet high by twenty-two broad. There is alſo another which repreſents Chriſt upon the Croſs, all the circumſtances of his paſſion being repreſented in different baſſo-relievos, and a handſome ſtatue of St. George.

The church of St. James is in the ſame taſte as that of St. Catherine, new and nearly of the ſame ſhape.

That of St. Claire is built ſimilarly to ours; it is beautiful and large. The chapel of the Ruſſians, or Greek ſchiſmatics, which is at the town-houſe, is of no conſideration, and very badly lighted; nevertheleſs there are many figures of ſaints gilt, and ſome ſculpture, but badly proportioned, and ſomewhat after the Chineſe taſte: the ſanctuary, where the altar is, is kept ſhut; the prieſt opens and ſhuts it ſeveral times in performing the office. At Stockholm are many Roman Catholics, who exerciſe their religion freely, in the chapels of H. E. the French ambaſſador and the envoy of the Emperor.

In the mean time we thought of our work, and of proceeding in as little time as poſſible to the moſt northern parts of the ſtates of Sweden. We amuſed ourſelves in looking about the city, only when we could not occupy ourſelves in accelerating our voyage: every thing at length was ready; M. de Maupertuis had made every neceſſary arrangement. * At Stockholm he met with M. D'Hegreman, ſon-in-law of the burgomaſter of Torneo, a little town ſituated at the bottom of the Gulph of Bothnia, and through him he had ſecured a veſſel to carry our luggage and inſtruments. M. de Maupertuis hired as well a ſervant, who ſpoke Swediſh and French, beſides which H. E. the ambaſſador gave one of his own; and as our intention was that the operations ſhould be carried on on the coaſts of the gulph, his excellency inſiſted on our ſhipping his own boat in the veſſel which carried our luggage and inſtruments. * M. Sommereux and moſt of the ſervants went on board, and ſailed on Sunday the third of June.

Monday, the fourth, after dining with the ambaſſador, he preſented us altogether to take leave of the King of Sweden. We had bought two coaches to travel from Stockholm to Torneo by land: M. de Maupertuis ſet off in one, with Meſſrs. Clairaut and Celſius, on Tueſday morning, the fifth, to viſit M. le Comte de Horn, who was at his country-houſe, and proceed thence to Upſal, where we were to meet together. M. de Maupertuis always intended that we ſhould have purſued our route from Stockholm to Torneo by ſea; but we prevailed upon him to alter our plan, from the repugnance to the

ſea which ſome of us manifeſted. It is true, the expence of travelling by land was not conſiderable. Coaches made entirely of wood, lined with fuſtian, and with common glaſs inſtead of plate, coſt no more than five hundred livres a-piece: each horſe in Sweden is paid for after the rate of eight ſous for a mile, which is equal to two French leagues, and in this manner we travelled; this formed almoſt all our expence.

Wedneſday the ſixth, at eight o'clock in the morning, we ſet off in the ſecond coach, Meſſrs. Camus, Le Monnier, Herbelot, and myſelf; we went again to take leave of the ambaſſador, and left Stockholm at nine o'clock. We changed horſes at Rotebron, two miles off, that is to ſay, nearly four French leagues: the Swediſh mile contains eighteen thouſand Swediſh ells, each ell one foot ten inches of French meaſure. From Rotebron to Maeſtrad one mile and three quarters; from Maeſtrad to Alſik one mile and three quarters: theſe are the names of the places where we changed horſes. From Alſik is one mile and a half to Upſal, where we arrived at ten o'clock at night.

It is ſeven miles from Stockholm to Upſal, through a country filled with rocks and ſmall hills covered with firs, among many branches or ſinuoſities made by the river of Stockholm. We paſſed a river to the north of Alſik in a flat boat; and a little before our arrival at Upſal we entered a beautiful wood of large firs, traverſed by a road in a ſtraight line.

The roads from Stockholm to Upſal, and even as far as Torneo, are fine, well kept, and marked at every quarter of a mile by a wooden poſt, properly ſhaped and painted red, on which is marked the number of miles and quarter of miles from Stockholm. Some ancient poſts are found as well, or rather pillars of ſtones; but within a few years the roads have been meaſured by the pole, and ſince wooden poſts have been placed. Frequently along theſe roads gates are met with, which ſhut in a moſt ingenious manner.

M. de Maupertuis ſoon after arrived with Meſſrs. Clairaut and Celſius. On the ſeventh we all went together to ſee the governor of Upſal, who detained us to dinner. At the end of the repaſt, white wine, in which orange and ſugar were mixed, was handed round in a large glaſs; every one drank from the ſame glaſs, which went round ſeveral times, firſt to the health of the governor and his lady, and afterwards other toaſts. After dinner we went to ſee the great church, which is the cathedral, the univerſity, and the garden of the caſtle; and all of us ſupped with M. Celſius.

The city of Upſal is rather large, moſt of its ſtreets are perfectly ſtraight. Except the cathedral and ſeven or eight houſes, which are of ſtone, all the other buildings are of wood, covered with birch-bark, and turf upon that: there is only the houſes of the governor and the archbiſhop which are covered with birch-bark without turf; and throughout the remainder of the road towards the north they are as well without turf. On an eminence to the ſouth of the city the caſtle ſtands in ruins, but the garden is yet handſome. Looking on the town from the caſtle, it has the appearance of a large garden, the ſtreets of which, in ſtraight lines, ſufficiently reſemble the alleys, and the houſes covered with turf the ſquares. A river paſſes through the city, the water of which is red. Over this river there are two bridges, ſuſpended to beams arching from one ſide of the river to the other.

The cathedral is rather large, but ill paved: there is an excellent choir, a fine altar, with a great crucifix, and a very handſome pulpit: in the ſacriſty are ornaments ſufficiently rich, among others a ſuit of black for Good Friday; two chalices, one of which is of gold; wood of the real croſs on a great croſs of ſilver gilt. In a chapel of the cathedral the tomb of St. Eric, King of Sweden, is ſeen, a martyr: both the tomb and the relics are greatly neglected.

In the univerſity are four auditories, or apartments for teaching: there is a cabinet of

of rarities, and a tolerably good library. I noticed a quadrant of Hevelius; it is of wood, divided into ſpaces of ten minutes, four feet and a half radius, with ſights.

Friday, the eighth, we went to the archbiſhop's, but he was then holding a conſiſtory, and we could not ſee him: M. de Maupertuis returned there in the afternoon, or the next morning, and held a long converſation with him.

If we had ſet off together we ſhould frequently have been delayed at the ſtages, where we ſhould ſcarcely have been able to meet with ſufficient horſes for our two coaches; we therefore took the precaution of ſending a ſervant before on horſeback, who ordered the horſes to be got ready for the firſt coach, and this gave information at the different ſtages where we changed that another would follow in ſeven or eight hours, in order that the horſes might be got ready, and we arrived the quicker at Torneo.

Meſſrs. Camus, Herbelot, and myſelf, began our journey at five in the evening in the firſt coach. M. Meldecreutz, a Swede, who was fond of geometry, and ſpoke French, ſhould have made the fourth, and promiſed to join us at Upſal; he however did not come: he arrived not till ſome days after in a chaiſe with a young Swediſh nobleman, ſon of M. de Cederſtrom, ſecretary of ſtate: this young nobleman having a deſire to ſee the country which we were going to, determined to take the opportunity of our expedition.

We found about half a mile from Upſal, a little before our entrance into the wood, a church and ſome ruins, which we were told were Old Upſal. We changed horſes at Hoyſtadt, one mile and a quarter from Upſal; at Laby, one mile and a quarter from Hoyſtadt; at Yffetel, two miles beyond Laby; the road all the way excellent, but through a country made up of marſhes and woods.

We arrived at Yffetel a little before midnight; we found ſome eggs, which we made them boil hard for us, and they formed our ſupper. We left it on Saturday, the ninth, at two o'clock in the morning, went through the woods as far as Mehede, a diſtance of two miles and a half, and always through woods and low grounds, yet covered with water, from the thawing of the ſnow, to the great town of Elfſkarby, one mile and a half beyond Mehede. To arrive at this town it was neceſſary we ſhould paſs over a great river, which has a handſome cataract, where there are iron-founderies, in a boat. We left it at eleven o'clock, by a road through woods of fir, between lakes and rocks; having paſſed a river by the way, over a bridge, we arrived at three in the afternoon at Geffle, which is two miles and a half from Elfſkarby, and eighteen from Stockholm.

Geffle is a pretty large town; through it a river paſſes, over which is a wooden bridge: veſſels come up the river into the town. In the middle of the town are ſeen the remains of a ſtone caſtle, which ſeemed to have been ſomewhat grand. Some of the houſes of the town are of ſtone, the remainder of wood, without turf on the roof. The enclo-ſure of the town is the ſame as at Stockholm; and at Upſal is a palliſado, with very neat wooden gates; it encloſes ſeveral large gardens: by the remains of the church which was burnt, it appears to have been of ſize.

We found a good inn at Geffle. After dinner we went to the governor's, who was abſent: we begged his ſecretary to forward orders for our obtaining poſt-horſes, and ſet off at ſix in the evening, before the coach of M. de Maupertuis arrived.

After half a league of open country, we again met with woods and rocks, as far as Troye, a mile and a half diſtant, where finding freſh horſes, we went on, through a marſhy and woody country, to Hamrung, one mile and three quarters farther: we arrived there at eleven o'clock at night. We ſoon after again ſet off; we paſſed through very thick woods for the ſpace of ſix French leagues, in the midſt of which are ſome houſes, on the banks of the river Liuſna, which we croſſed in a boat: farther on we croſſed

another; afterwards we continued our route between lakes on the right and left, and arrived at Skoog, a three-mile ſtage, at five in the morning. This night the gnats plagued us greatly: to get quit of them, we were obliged to draw up the glaſſes of the coach, when, the weather being extremely hot, we were nearly ſuffocated: this inconvenience however was more tolerable than the gnats.

As it was Sunday, the tenth, we could not obtain horſes until the people returned from church, we conſequently threw ourſelves on beds to take ſome reſt, having firſt eaten ſome bread and cheeſe which we took with us; for in general we could meet with nothing to eat, ſometimes eggs and milk, but the milk moſtly ſour; they make it ſour immediately upon milking the cows. When the good people we travelled among had any thing to give us, they gave it moſt willingly; and it was neceſſary for us to inſiſt, before they could be perſuaded to receive for it. Every thing there is cheap, and our liberality aſtoniſhed them.

The poſt-maſter is not obliged to keep more than one horſe in the ſtable: when ſeveral are wanted, he informs the individuals of his neighbourhood, who go to the woods to ſeek theirs. Theſe individuals, ſometimes as many as three, came, bringing their horſes; one mounted the coach-box, another one of the horſes, and at times they ran on foot a great length of way. It is the rule to pay them eight ſous per horſe per mile; for the drivers, we paid them twice or three times as much as the people of the country are wont to do, which was very trifling. If we gave them eight ſous for two or three miles, they were ſurpriſed at our generoſity; they took us by the hand, with an air of joy and friendſhip, exclaiming: "For myck, tak myn her;" you give too much, thank you, Sir.

After repoſing ourſelves a little, we ſet off at one in the afternoon: the road ſtill through woods; ſome lakes and mountains are ſeen. We paſſed in a boat by rowing acroſs a river, and arrived at half paſt four at Soderella, two miles from Skoog.

From Sodarella we went to Noralla, one mile off: between theſe places we paſſed by Soderham, famous in Sweden for its muſquets.

From Noralla we proceeded two miles and a half through woods, wherein were marſhes, and here and there ſome houſes, and arrived at Upangè, at eleven o'clock, leaving it at midnight. One Swediſh mile farther on, on the eleventh, we entered a more pleaſing country, but more mountainous: there are lakes, and a river which works a conſiderable forge, near to which is a handſome houſe, cloſe to the poſt-houſe of Ekſunda, one mile and a half diſtant from Upangè.

We left Ekſunda at three o'clock in the morning, and at a mile diſtance paſſed cloſe to Hudſwikſwald, without entering it; it is a town of a neat appearance; it had two ſteeples, and a town-houſe with a kind of dome; the town is ſituated at the bottom of the gulph.

A little farther, that is to ſay, one mile and three quarters from Ekſunda, we took freſh horſes at the poſt-houſe of Sand, and again others, three quarters of a mile farther, at Weiſta: theſe two latter places are ſituated in a fine country, of valleys abounding with barley and rye.

From Weiſta we went on to Hermongar, one mile and three quarters off, always among woods. For the firſt time on the road we ſaw rein-deer, which ſhepherds were guarding, and which appeared very tame. Leaving Hermongar we paſſed a river, all the way was lined with woods of birch, for one mile and a half, to Gnarp, which we reached at two o'clock in the afternoon.

We waited there for M. de Maupertuis, who arrived at nine in the evening. While waiting for him we dined and ſlept, and departed at ten o'clock, leaving our companions

in the ſecond coach to take their reſt in their turn. Almoſt always woods of fir; we paſſed through a hamlet, croſſed a torrent, and at laſt a great river, over a bridge, at the end of which is the poſt-houſe of Niuronda, two miles and three quarters from Gnarp. Meſſrs. de Cederſtrom and Meldecreutz joined us here.

At ſix in the morning of Tueſday, the twelfth, after going one mile and a half, we arrived at the little town of Sundſwald, very prettily ſituated at the bottom of a ſmall gulph, where veſſels come up: the church and the town-houſe have a very neat appearance, as well as the houſes themſelves. We paſſed a great river a quarter of a mile before we came to it, and a ſmall one on leaving it, which empties itſelf into the gulph. We aſked for bread, and were told there was none. There is no poſt-houſe in this town, wherefore we went on with the ſame horſes, one mile farther, to Dinguelſtadt, two miles and a half from Gnarp.

We left Dinguelſtadt at eight o'clock, and, through roads mountainous and full of ſinuoſities, came to the great river of Lindal: we paſſed in a bark the two branches which it forms on different ſides of an iſland; and after landing we changed horſes at Fiahl, one mile and a quarter from Dinguelſtadt.

At noon we quitted Fiahl, going through woods of birch, and at three o'clock arrived at Marck, one mile and ſeven-eighths diſtant: we dined there, and left it at ſeven o'clock. We met now with an unequal country, but in which were fine valleys, intermixed with lakes: mid-way paſſed a river, and got to Skoog by ten o'clock, one mile and three quarters from Marck.

We now were near Hernoſand, and paſſed by the country-houſe of its biſhop. M. de Maupertuis afterwards informed us that he went to ſleep there, and received at his hands every mark of politeneſs. M. de Cedeſtrom, his relation, told us as well he would have been much gratified to have ſeen us.

We left Skoog, on the thirteenth, at eleven o'clock at night, and towards midnight arrived at the borders of a gulph, into which the great river Angeran empties itſelf. It blew freſh; the boatmen adviſed us not to go over with the coach: they joined two boats together, faſtening them well; they placed the two hind-wheels of the coach fartheſt from the ſhore, making them run on planks, and afterwards the two fore ones in the other, and got over by dint of rowing, being ill-favoured by the wind, which had much to work upon in the coach: we were obliged to uſe the ſame means in the paſſage of ſeveral other rivers on the road. After the coach was landed, they returned to paſs us over; this manœuvre coſt us nearly three hours.

On landing we met with horſes ready for us on the banks at Veyda, and at four in the morning we reached Skullerſtadt, three quarters of a mile from Veyda, and one mile and five-eighths from Skoog. We ſlept at Skullerſtadt, and did not leave it till eleven o'clock: the roads were very crooked, and over high mountains, the vallies of which are moſtly lakes, or arms of the ſea. We went two miles and a half farther, and arrived at four in the afternoon at Saltzoker; thence over mountains to Eſſya, five-eighths of a mile from it: we found there flat bread, in the form of cakes, which was good, as well as the milk and butter; for a long time we had not fared ſo well. The country ſtill full of mountains, but the beſt we had ſeen ſince we left Upſal. The valleys end in lakes, or gulphs; but there are a many fields ſowed with barley and rye. We quitted Eſſya at ſix o'clock, and, on account of the mountains, did not arrive at Dokſtat, although no more than a mile diſtant, until nine. We could have embarked our coach in boats at Saltzoker, and paſſed by water to Dokſtat; it was propoſed to us, but would have given us too much trouble.

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At a quarter of a mile beyond Dokſtat we paſſed under mount Skula; above we perceived the entrance of an apparently inacceſſible cavern; we were told however that people had entered it, and that it was very white inſide. We travelled between the ſea which was eaſt of us, and this mountain which is nothing but one prodigious rock. The country continually mountainous, but the roads much better. We arrived the fourteenth, at one o'clock in the morning at Bieſtadt, two miles from Dokſtat. We waited here for M. de Maupertuis who came up with us together with Meſſrs. Clairaut, Le Monnier, and Celſius at half paſt five. M. de Cederſtrom with M. Meldecreutz, arrived nearly at the ſame time. M. Herbelot ſtaid behind to follow in M. Cederſtrom's chaiſe; and M. Meldecreutz occupied his place in the coach, which carried M. Camus and myſelf.

We ſet off at ſix in the morning, meeting with many mountains and woods, and after travelling a mile arrived at the poſt houſe of Hoonas. We left it at ten o'clock: many mountains the valleys of which were fertile, frequently lakes and gulphs; we paſſed over one by a bridge and arrived at Broſtadt a mile and one-eighth from Hoonas.

As all their moveable feaſts were four weeks behind, they were now keeping Aſcenſion Day, and we could not obtain horſes till one in the afternoon. We were twice obliged to have ſome parts of our coach mended; and M. de Maupertuis overtook us. After proceeding a mile we croſſed a large and rapid river over a bridge; the water of it was red, the caſe with the moſt part of the rivers of this country; we croſſed a ſecond by a bridge called Huſa, a little while before we reached Onſka, two miles and three quarters from the laſt poſt houſe.

We arrived at Onſka nearly all together; a man came to inform us that M. Sommereux and our luggage was at anchor about three leagues from us. M. de Maupertuis went firſt in his coach; one of our ſervants driving him, on going down from Onſka, (for the peaſants of this country do not underſtand driving), ran the coach againſt the gate, and broke the ſhafts, which obliged him to return to the poſt houſe to have them mended; and as we were ſtill together, M. de Maupertuis tired of the inconveniences of travelling by land, took horſe and joined the ſhip. M. de Cederſtrom in our coach took the place of M. de Meldecreutz, who remained at Onſka to wait for M. Sommereux, who M. de Maupertuis was to ſend back from the veſſel.

The fifteenth, we journeyed for two miles through woods of fir and birch, and by midnight came to the poſt houſe of Afwa, and one mile and half farther to that of Lafwar. Thence to Sodermiola was three miles and three quarters, and two miles and a quarter from Sodermiola to Rodbek; we paſſed entirely through foreſts of fir and birch, over very ſandy roads, with now and then a lake.

Rodbek is a fine and large village at the weſt of a great plain or meadow, interſperſed with a number of ſmall ſheds for houſing the hay. In this village there is very good water, ſaid to be mineral. We changed horſes at Rodbek, which is only a quarter of a mile diſtant from the town of Uhma; we croſſed a part of this great plain, and paſſed in a boat the river of Uhma, where we arrived at half paſt five in the evening; the ſecond coach followed us very cloſely.

The city of Uhma ſixty-eight miles one-eighth from Stockholm, is no otherways handſome than from its ſituation on a river of the ſame name, wide as the Seine at Paris, and on which the veſſels come up to the houſes. There are four ſtreets in a ſtraight line running from eaſt to weſt, and parallel with the river: they are croſſed by ſeveral others north and ſouth. At the eaſtern extremity of the city is a great ſquare, in which is the church: on Sundays and Holidays there are numbers of men with halberts in the city to prevent noiſe and diſorder. And further on towards the north in every pariſh in

the country there is a Lanſiman, that is a man to whom the Governor addreſſes all orders for the public ſervice; in towns he is called a burgomaſter.

The proſpect of the neighbourhood is pleaſing; it conſiſts of large plains full of ſmall houſes or ſheds for hay, beyond which are the mountains rather elevated; half a mile from the city to the eaſt, on the northern ſide of the river is the houſe of the governor of the province, built entirely of wood, nevertheleſs very handſome for that country; people were at work in making large gardens ſufficiently pretty.

It having been noiſed about in the city that ſome Frenchmen were to arrive there, a number of perſons had collected to ſee us. M. Clairaut arrived with the ſecond coach, the care of which M. de Maupertuis had left to him; we ſupped together in a good inn and met with wine: at half paſt ten, Meſſrs. Camus, Celſius, Herbelot, and myſelf ſet off; M. Clairaut with the coach waited for Monſieur Sommereux, and to hear of the embarkation of M. de Maupertuis.

Leaving Uhma we met with nothing but fields, with ſome valleys for the ſpace of a mile and arrived at Taffley by midnight: thence ſtill the ſame country: we paſſed a river, and beyond it found a camp conſiſting of two companies only; they exclaimed in German, *war das*, M. Celſius anſwered *goth wan*, that is to ſay a good friend. The ſixteenth we changed horſes at Saſwaar, one mile and three-eighths from Taffley, and again entered woods, which continued one mile and ſeven-eighths to Diekneboda. About a mile farther, at ſix o'clock in the morning, we came to the village of Bygdo, we ſaw there an arch formed by two trees from thirty to forty feet high, from which is ſuſpended a kind of circle made of branches; here the troops exerciſe themſelves in throwing hand grenades. We did not change horſes at Bygdo, the poſt houſe was at Riklera a little farther, one mile and three-eighths from Diekneboda; from thence we went on to Gamboda, through a pleaſant country, the ſame diſtance of one mile and three-eighths. Afterwards higher mountains ſucceeded, one in particular which extends a great way from north to ſouth, at the bottom of which is a lake: we paſſed this mountain in an oblique direction, and arrived at noon at Grimmerſmack one mile and one-eigth diſtant; we left it, without waiting, and travelling through a ſimilar road, came by a beautiful valley between two lakes, to the poſt houſe of Selet, one mile from the former. We met here with good fiſh, and dined; they aſked next to nothing for our dinner, and when we offered them more, made ſome difficulty in accepting it.

It was two in the afternoon when we arrived at Selet; we left at it four o'clock: we paſſed a river, over a bridge, between two lakes; ſoon after another; then ſucceeded flat country, and fine woods of fir, as far as the poſt houſe of Dagboſtadt, one-eighth of a mile off. Thence through woods of fir for one mile and a half, when we reached Burea. We left this place at ſeven o'clock, and ſhortly after paſſed a river; then through a long valley in which runs a large river, on the banks of which we left our horſes at Simmanaſin, which is divided from Sialefstadt only by the river which we paſſed in a boat. From Burea to Sialefstadt two miles: it was midnight, on the ſeventeenth, when we landed; we did not go into Sialefstadt, which is a large town; we found horſes near the church, to the weſt of the village; the Lanſiman had been informed of our coming, and many were collected waiting to ſee us. At firſt they put horſes to our coach which did nothing but rear, not knowing how to draw. We had others harneſſed to, and when about to depart, the countryman who was to drive us, was much puzzled where to place himſelf, and after conſidering ſome time, at laſt clapped himſelf in the boot, where we could ſcarce perceive him, which diverted us highly. We ſlept without fear all four of us, during a great part of the way, notwithſtanding the bad coachman we had, and the horſes which drew us having been juſt

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caught in the woods, and which were very little ſuited to coaches, and that through immenſe foreſts, and ſometimes deſarts, where for four or five miles not a houſe was to be ſeen.

We at length ſet off; travelled through a tolerably fine country, and croſſed two rivers by bridges, and arrived at Fraſkager one mile and a half farther, at three o'clock in the morning; we left it again immediately; the road was perfectly level through foreſts of fir and birch, intermixed with marſhes. We paſſed a handſome and large river called Buſti, at four o'clock, whereat the coach was put in two boats; ſame road, level, and amid woods to Abyn, two miles and a quarter diſtant. We arrived there at ſeven o'clock; afterwards we paſſed a river over a bridge of wood, (in this country there are none of ſtone). We then had a very even road amid woods of fir and marſhes, but very ſandy, and in which we had much trouble to get on, ſo that we did not arrive at Geffre, no more than ſeven-eighths of a mile diſtant, before eleven o'clock. The valley of Geffre is ſufficiently pretty, one of its extremities reaches to the ſea to the ſouth-eaſt, and at the other is a lake through which the river runs. A number of houſes are diſperſed about, and a great quantity of land is under cultivation. We paſſed the river, and after riding two leagues, over an even but ſandy road, amid woods, we perceived a handſome common, well cultivated, with two hamlets: yet ſome woods, and a ſandy road till we came to the great river Pithea, which we paſſed in a boat at four in the afternoon, and arrived at Pithea, two miles and a quarter from Geffre.

It is the ancient Pithea, which, beſides a large village built round about the church, compriſes a great number of houſes diſperſed in a beautiful meadow, on the borders of ſome lakes, contiguous to the ſea, and the great river, which is rather an arm of the ſea. New Pithea, or the town, is a French league from it: we ſaw it on our return.

The eighteenth, we dined and ſtopped at Pithea, till Monday morning. M. de Cederſtrom and Meldecreutz, arrived at two in the morning, their chaiſe much damaged. M. de Clairaut came ſhortly after which his coach. As ſoon as theſe gentlemen had breakfaſted, we were deſirous of going on, but had to ſeek M. Celſius, who had gone to ſleep at the clergyman's, or rector of the pariſh, at ſome diſtance from the inn. M. Clairaut and myſelf went to look for him, but neither of us knew where he lived. We knocked at the door of a ſeemingly genteel houſe, imagining it to be that of the clergyman: although M. Clairaut already knew ſomething of the language, he could not make the ſervant underſtand him, and we were going further at hazard; when the maſter of the houſe, who was the judge of the place, came out, and ſaid to us in French, qui demandez vous Meſſieurs? (What do you wiſh Gentlemen). We were both ſurpriſed and pleaſed: he politely accompanied us to the houſe of the clergyman, which was ſome way off. M. Celſius returned with us, and ſet off in the firſt coach with M. Camus, M. Le Monnier, who took the place of M. Herbelot and myſelf. M. Clairaut and M. Sommereux repoſed themſelves a little, and afterwards ſet off in their coach, with M. Cederſtrom and Herbelot.

It was eight o'clock when we left Pithea, and after a mile and ſeven eighths, through woods intermingled with fields and lakes, we arrived at Roſwik by noon; thence travelling on we paſſed a bridge over a river, and after going up hill for a long time in the woods, we deſcended into a beautiful plain, and arrived at two o'clock at Ernas, one mile and an eighth from Roſwik. Leaving Ernas we paſſed an arm of the ſea, which looked like a marſh, and afterwards through woods of fir, to a river which we croſſed in a boat, about five o'clock. After paſſing this river, in a wood of fir, we had a very bad and ſandy road to get through; when we paſſed the river our two coaches were together: Meſſrs. Clairaut, Celſius, and ſome others went in a boat to Lullea: M. Sommereux

Sommereux and myſelf continued our route by land with the coaches, and arrived there at ſeven o'clock in the evening. This place is called Lullea gammal ſtadt, that is to ſay, Lullea the old town; it is a large place built about the church; there are ſtreets in it, as in a town, but without being ſurrounded by paliſſades. New Lullea is a town, a good league from it on the ſea ſhore, which we did not ſee from Ernas to Lullea, a mile and a quarter.

On quitting Lullea, we entered a country much diverſified by woods, marſhes, and fine fields, well cultivated. After paſſing a large collection of water over a bridge, at a mile and a half from Lullea, we reached the poſt houſe of Porſeon, ſituated in delightful meadows. We left it at eleven o'clock at night, paſſing the plain, we went up hill, through a wood; from this eminence we ſaw the ſun entire, although it wanted but a quarter of an hour of midnight. M. Le Monnier and myſelf climbed up trees; we wiſhed much to ſee the ſun at midnight, and would gladly have waited, but we could not hold out againſt the gnats, which plagued us to death: continuing our route we deſcended into a valley, and loſt the ſun. The country continued covered with woods of fir and birch, and marſhes, and after a mile and a half, we paſſed a great river in a boat to get to Raunea, where we arrived the nineteenth, at three o'clock in the morning, and by a ſimilar road at Huitathn, a mile and a quarter beyond. For there we paſſed two bridges, over watry marſhes, and reached Toreby at eight o'clock, diſtant a mile and five eighths; we paſſed through great woods by a mountainous and unequal country. It was nearly noon, when we found ourſelves on the bank of a great river, which forms a lake, from which it iſſues with rapidity. On both ſides the river the country is well cultivated, with ſome houſes; till two o'clock we followed the courſe of its ſouthern bank, and after two miles riding we croſſed it in a boat to arrive at Calix; M. Celſius, and ſome others of our party went to the clergyman's or rector's, called in Swediſh Kyrckher.

From Calix, we ſet off at four o'clock, always through woods, with bad and ſandy roads. The ſervant which we had with us, who went before, ſent us horſes to the middle of the wood, and we changed after having gone a mile. We walked another mile, paſſed between two lakes, and came to a little river juſt before a village called Sangis, where there are ſome well cultivated fields, as is generally the caſe, round about the villages and hamlets of the country; which are ever near the banks of ſome river, or the ſhores of ſome gulph.

At Sangis, we croſſed in a boat a large river, and took horſes, with which we travelled for a mile between lakes, through a mountainous country, interſected by marſhes, as far as Sanhiwitz, where we arrived at eleven o'clock at night. We yet continued among woods, and marſhes, croſſed two bridges over ſmall rivers; then an arm of the ſea in a boat at two o'clock on the twentieth, and a ſimilar at four: yet ſome woods, and marſhes; after which we arrived at Huparanda, upon the ſhore of the gulph, formed by the river Torneo, at five o'clock, two miles diſtant from Sanhiwitz, and one hundred and ſeven miles and three eighths, from Stockholm.

We paſſed this gulph with our coaches by boats to go to Torneo, where we reckoned no taking up our quarters; but having learned that M. Piping, burgomaſter of the town, lived near the bottom of the Gulph at Martila, in his houſe called Nara, we did not go down to the town, but went in the ſame boat to the bottom of the bay, and entered the houſe of M. Piping, who had been informed of our journey by M. D'Hegreman, his ſon-in-law, a merchant of Stockholm; and in conſequence prepared apartments for us. M. Clairaut and thoſe who were in his coach, arrived ſoon after us. We were all very much fatigued; and reſted ourſelves during Wedneſday and Thurſday. It was

the day of the ſummer ſolſtice, on the twenty-firſt, a ſeaſon when in this country, the ſun is ſeen paſſing the meridian at midnight, in the north. We looked for this ſight but in vain; the vapours with which the horizon was overcharged hindered us. Charles XI. King of Sweden, incited by the ſame deſire, purpoſely undertook a voyage from Stockholm to Torneo, to ſee it, he was more fortunate than us, for getting into the belfry, he ſaw more than a quarter of the diameter of the ſun at midnight.

M. de Maupertuis had made a fortunate voyage, he had ſeen from ſea, the ſun during a whole night, at leaſt a part of its diſk. He arrived at Torneo nearly two days before us, and found there M. Gullingrip, governor of the province, who was going into Lapland. M. de Maupertuis did not heſitate to accompany him, impatient to examine the country, he went as far as Ofwer Torneo, and aſcended mount Avaſaxa, to ſee if he could not draw ſome advantage for the obſervations from the mountains. He did not chooſe to go farther, wiſhing to be at Torneo againſt our arrival. We had the pleaſure of ſeeing him there, and of meeting altogether on Thurſday evening.

The twenty-ſecond, M. Duriez, lieutenant colonel of the regiment of Weſtro-bothnia, was then at Torneo. We went altogether on Friday to viſit him, at a ſomewhat elegant houſe which he had at Hapaniemi; he treated us with great civility, and during our ſtay in the country we ſaw him frequently. There were only two perſons in Torneo, who ſpoke French, M. Duriez, and a young man, whom the governor pointed out to M. de Maupertuis, and who ſerved us for an interpreter.

From Hapaniemi, we went to the town: we aſcended the balcony of the town-houſe to obſerve the neighbourhood; for we thought of nothing but finding ſituations proper to form a ſucceſſion of triangles. M. de Maupertuis, on his journey to Ofwer Torneo, and from the ſummit of Avaſaxa, had ſeen ſome mountains, which appeared advantageous to our purpoſe; but he noticed that the greater part of theſe mountains were near to each other, and covered with trees.

We employed Saturday and Sunday in viſiting the neighbourhood of Torneo, and in deliberation on the meaſures moſt proper to adopt, for the ſucceſs of our operations. At length we reſolved on going to viſit the coaſt of Oſtro-bothnia, and the iſlands along that coaſt. We no longer thought of the coaſt of Weſtro-bothnia, ſince M. de Maupertuis informed us, that coming by ſea, he had noticed it, and that both the coaſt and iſlands were nearly level with the water, and covered with wood.

M. Camus, Sommereux, and myſelf, were charged with the examination of the courſe of the coaſt, and the iſlands met with there, from Torneo as far as Brakeſtadt: we took ſeven men who were to row and ſteer the boat, which was a common one, in which we embarked with two ſervants, and proviſions for a fortnight: that is to ſay, buiſcuit, and ſome bottles of wine remaining of the ſtock laid in at Dunkirk.

We began our voyage, Monday the twenty-fifth, at half paſt ſix in the afternoon. I continually obſerved with my compaſs, the direction we took, the poſition of the iſlands, and the moſt apparent parts of the coaſt. The twenty-ſixth, at four in the morning, we had already advanced ſeven miles and a half from Torneo; the wind became northerly, and we ſet the ſails. We were all extremely cold; we landed on the iſland of Knawaniemi; we made a good fire, beſide which we breakfaſted. The wind continued northerly with very fine weather, we carried ſail, and arrived at Ullea, at half paſt five in the evening, on the ſame day, (Tueſday,) which with them was Whit-Tueſday.

Ullea, is a pretty conſiderable town of Oſtro-bothnia; the ſtreets are in ſtraight lines, and very long. There is but one church, and a town-houſe, where there is a public clock. Veſſels come up nearly to the town, it is built entirely of wood, as well the church as the houſes of the town. There is a dock-yard in which veſſels are built. The caſtle of Ullea called

Ullaborg,

Ullaborg, is in a ſmall iſland to the north of the town, it is built alſo of wood. The cuſtom-houſe is in another little iſland not far from the town at N. W.; and W. of the caſtle.

At Ullea we found a pretty good inn, we ſupped, and ſlept there. Ullea is fifteen miles from Torneo, and eight from Brakeſtadt, where we were bound: we could very well have diſpenſed with going there, for we found neither the coaſt nor iſlands fit for our work; however, not to neglect any thing we continued our voyage. M. Camus had recommended a ſecond boat with two oars, to accompany us from Ullea, and we departed with our two boats on Wedneſday, the twenty-ſeventh, at five in the morning, we ſteered S. W. till noon; we carried the little Engliſh quadrant with us; on Tueſday we had obſerved the height of the lower margin of the ſun, and found it 48° 6′, this day we found it 48° 25′.

From our leaving Ullea we had had but little, although contrary wind, and by noon we had advanced no more than three miles. Shortly after noon the wind having much increaſed, and the ſea being greatly agitated, we endeavoured to reach the ſhore; at firſt we got behind a large heap of ſtones, projecting ſomewhat into the ſea; for the ſea being very ſhallow along the coaſts, there are few places where it is eaſy to land; in the mean time the ſeamen informing us, that if the ſea ran higher we ſhould not be in ſafety behind this heap, we returned about half a mile in order to find a ſafe harbour. We landed, erected our tent, and reſted ourſelves 'till eight at night. The wind having ſlackened then, we ſent back our ſecond boat which was uſeleſs to us, and ſet off in the firſt to continue our route. By midnight, we had advanced two miles, and were about five miles from Ullea; M. Camus deeming it unneceſſary, wiſhed to return towards Torneo, and viſiting the Iſlands of Carloohn, and Sandhon, we ſteered then N. N. W. The ſailors were much ſurprized, and knew not what to make of us, they ſaid they had never before in ſuch a boat proceeded ſo far from land; for theſe iſlands are five French leagues from the ſhore. We thought firſt of going to Sandhon, although a deſart, and without any habitation, but we could not get near enough to it, owing to the extreme ſhallowneſs of the water. We returned towards Carloohn, where we landed with difficulty, at five o'clock in the morning: one of our mariners was obliged to carry us on his ſhoulders for a conſiderable diſtance, the boat while loaded not being able to approach near. We found there a hamlet, and entered the beſt houſe, called Heikis; they ſhewed us into a room with two beds in it, the room furniſhed with benches all round. We remained there above two days, living on our proviſions, with ſome milk and fiſh that we bought in a village: for ſhortly after our landing the wind blew ſo violently, and ſo adverſely the whole time, that we could not leave the place.

Towards evening M. Camus and Sommereux, went to the houſe of the clergyman, which we were informed was about three quarters of a league diſtant. He ſhewed them great civility; the next day he ſent us eggs, and on Saturday morning he came to ſee us. I accompanied him a good part of the way on his return, and we had a long converſation together: as he had learnt that I was a prieſt, he often inquired of me, why are you not allowed to marry? This good chaplain was ſhortly about to marry the daughter of the rector of Flaminia, who had recently died, and expected thereby to inſure to himſelf a ſucceſſion to the rectory, of which he was only the curate: he took all our names, and was delighted with our having touched at his iſland. We ſaw there very fine crops of rye and barley. Every countryman here as well as in Weſtrobothnia, has ſeveral out-houſes; he has his windmill, and manufactures his own cloth. This iſland is four miles from Ullea, and two miles from the main land, it nearly joins

the little Iſlands of Hanis and Lappakari. Carloohn is the only iſland which we ſaw on our voyage which is inhabited.

At length on Saturday, the thirtieth, at nine in the evening, the wind having abated, we returned to our boat to proceed towards Torneo. At half paſt eleven a large flock of birds, called Curlews, came over making a horrid noiſe, and flying very near us: occaſioned by our approaching an iſland formed by a great heap of ſtones, on which they made their neſts. We arrived there at midnight and landed, this cauſed an increaſe in the cries of the birds, who when we took any of their little ones appeared ready to attack us. We afterwards paſſed by three ſimilar iſlands. A ſtrong S. W. wind riſing, which cauſed a great ſwell, at two o'clock in the afternoon, we got into a creek, where we landed. In this place were fiſhermen's houſes; it is called Muſcalackti, and is a little to the N. W. of Simoka. We were told that M. de Maupertuis had been there on Friday. At five o'clock we left this place, and arrived by ten, at the iſland of Mounolota, where we landed, and from which Torneo is eaſily diſtinguiſhed. We did not deſcend the river by the ſame courſe we took on leaving Torneo; we ſteered then E. of the Finniſh church, and the iſland of Biorckholn, near the little iſland of Rugen, and returned by the other branch of the river to the W. of the iſland of Biorckholn, and arrived at the burgomaſter's on Monday, the ſecond of July, at three o'clock in the morning, where we communicated to M. de Maupertuis, all the remarks we had made on our voyage. He had himſelf undertook a journey along a part of the eaſtern coaſt of the gulph, and ſaw that there were no means of forming a ſucceſſion of triangles. M. Celſius propoſed to poſtpone the work until winter, and to effect it by actual meaſurement on the ice of the gulph: but what ſhould we have been doing for three months, during which we could ſee no ſtar, the ſun being always above the horizon, or ſo little ſet that there was a continual ſtrong twilight? Beſides, we had not yet received the ſextant, by which we were to obſerve the diſtance of certain ſtars from the zenith; and the inhabitants of Torneo could tell us nothing for certain of the ſtate of the gulph in winter: they imagine that the whole of it is frozen over; but no one could tell us how far we might with ſafety venture on the ice. And if certain of being able to traverſe it, a S. wind happening to blow, the ice would be opened, and ſometimes piled up, and thereby our plans become interrupted, and loſt.

It was propoſed to cut a line directly N. and S., and meaſure it with the rod, through the woods, this was a propoſition ſuperior in value to our truſting to the ice; it was more certain, but ſubject to great inconveniencies. Although the country be not very uneven, we could never expect to meet with twenty leagues without conſiderable elevations, and without having lakes, rivers, and marſhes, to paſs, which would have made this meaſure difficult of execution.

At laſt M. de Maupertuis reſolved on undertaking the operations on the mountains. M. Viguelius, director of the ſchools of Torneo, who had for a long time acted as paſtor, or chaplain, in Lapland, informed us that the river Torneo ran more nearly from N. to S. than what the maps deſcribed, which gave us further encouragement. M. de Maupertuis laid his plan with M. Duriez, to have a number of ſoldiers ready to forward us in their boats: theſe men are peaſants reſiding in their own houſes, always ready at call, either to paſs in review, or to join the army; a very courageous ſet of men, and not afraid of fatigue. There is not an inhabitant of Torneo without one or more boats; for during the ſummer, and as long as the river be navigable, they travel in no other manner; and it is terribly laborious to walk, as we, in the event, were obliged to do, through a country made up of marſhes and foreſts, and where the moſs grows ſo high, that a man can ſcarcely extricate himſelf from it.

Tueſday, the third, and Wedneſday, the fourth, we employed ourſelves in preparing for travelling: ſome biſcuits, a few bottles of wine, ſome rein-deer ſkins for our beds; four tents, which could contain no more than two perſons each; two quadrants, a plane-table, a pendulum, thermometers, and all the inſtruments neceſſary or uſeful towards the completion of our operations; this was our baggage.

We went twice near the Fins' church, in the iſland of Biorckholn, in order to reconnoitre properly two or three mountains perceivable from that ſpot, and the belfry, which we went up. Thurſday, the fifth, was the feaſt of St. John, which they keep eleven days later than us, according to the old ſtile: it was a grand ſolemnity, and we could not depart that day, notwithſtanding every thing was ready.

Friday, the ſixth, by nine o'clock in the morning, our inſtruments, our proviſion, and the few cloaths which we took with us, were embarked, and we departed in ſeven boats, each boat manned by three men. We were all eight of us together, with five ſervants, the other two being left at Torneo: beſides, we carried with us our hoſt, M. Piping, the young M. Helant, who M. de Maupertuis had met with at the governor's, and who ſerved us an interpreter throughout the expedition. M. Piping and M. Helant ſpoke the Finniſh tongue, the only one in uſe among the ſoldiers, and throughout the country beyond Torneo, and which is entirely different from the Swediſh; he ſpoke Latin alſo. We landed, and walked along the banks, while the ſailors with great difficulty got the boat up the cataracts of Wojackala and Kuckula.

The mountains which we ſaw from Torneo were Nieva and Kukama: the firſt is not far from the river, it is nigh ſome houſes called Corpikyla; and it was on this mountain that M. de Maupertuis wiſhed to make his firſt ſtation, and begin the operations; but for this purpoſe objects to be ſeen were neceſſary. Kukama preſented itſelf as fit for this purpoſe; and the firſt thing to be done was to conſtruct a ſignal there. At ſix in the evening, while all our flotilla was before the village of Karungi, I detached myſelf, with Meſſrs. Sommereux and Helant, two ſervants and two boats; of the ſix men which manned theſe, one was left in care of them, and with the five others we undertook to go to the mountain of Kukama. We met with dreadful roads; as the ſnow had but lately thawed; the marſhes, which formed a great part of the road, were impaſſable. The inhabitants, to paſs theſe marſhes, had joined together fir-trees end to end, on which, by keeping a due balance, it were poſſible to paſs, if the knots of theſe trees, which are like ſo many points, allowed of treading on them: and there was nothing impoſſible to our ſoldiers; they carried our proviſions and their own, with hatchets, the plane-table, with a part of our cloaths; and when we could no longer walk on the trees, we trudged through the marſhes: once I ſunk in up to the knee, and with difficulty got out. We traverſed two lakes; a boat which was in the firſt of theſe lakes not being on the ſide neareſt us, our ſoldiers gathered together ſome pieces of timber, upon which two of them got, to go to fetch the boat, on which they ferried us over. On the ſecond lake there was no boat; in the ſame manner as before, they faſtened together ſix pieces of timber, on which we all ten embarked; but as it ſunk a little under our collected weight, two ſoldiers re-landed with our two ſervants; they joined five pieces of wood together, on which they paſſed, while we went over on the firſt. On all the road we found only a deſerted mill, on the river Muſta, and two barns for hay near the lakes. We ſuffered a great deal, not only from fatigue on the road, but from the ſtinging of gnats and the heat. Although it be no more than three French leagues from Karungi to Kukama, we were eight hours in going, and did not arrive there before two o'clock on Saturday morning.

Our

Our ſoldiers went to the ſide of the mountain to cut ſome firs, and carried them to the top, which is naked and craggy: moſt of the rocks compoſing it are foliated with large leaves and ſmall, all laying like beau-traps, and ſupporting one another, ſo that it is difficult to walk on them. On the moſt elevated part of theſe rocks we planted one of our firs, which we ſupported at foot by means of the other trees. Although we had no need of warmth, we kindled a large fire to drive away the gnats, and to be enabled to ſleep a little, laying on the rocks. I obſerved with the plane-table the angles made by the Finniſh mountains. We luckily found abundance of excellent water, in a ſort of natural ciſterns made by the rocks, and after eating of our proviſions, we deſcended from the mountain at noon.

By different, but equally difficult roads, we proceeded to Mount Nieva. After paſſing a lake in a little boat, which came cloſe to the ſide, M. Sommereux, a ſervant, and four ſoldiers, went for the two boats which we had left at Karungi; and the fifth ſoldier conducted M. Helant and me ſtraight to Nieva, by tolerable roads.

We arrived at ſeven in the evening at the top of Nieva, where we found the tents erected, as well as a ſignal imagined by M. Maupertuis, of a moſt advantageous deſcription. Inſtead of a ſingle tree to ſerve as a ſignal, as I had done at Kukama, M. de Maupertuis conſtructed a pyramid of trees, ſtripped of their branches, and placed one againſt the other. Theſe trees, faſtened together at the top, and ſpreading towards the bottom, made at the ſame time a ſignal, the point of which could be diſtinguiſhed with nicety, and an obſervatory, in the middle of which was placed the inſtrument for obſerving the angles, *without any reduction at the centre*. This plan was afterwards adopted for all the ſignals which we conſtructed, even for that of Kukama, which was rebuilt.

Shortly after, M. Helant and myſelf had arrived at the top of Nieva, M. Maupertuis, with M. Camus, two ſervants, and twelve ſoldiers, having M. Piping as interpreter with them, departed to plant ſignals on ſuch mountains towards the north as he ſhould find ſufficiently high, and in ſituations ſuitable to forming good triangles.

Sunday, the eighth, we had a great deal of company; the Fin inhabitants of the neighbourhood came in flocks to ſee us. Our party, on reaching the mountain, found two Lapland women feeding their rein-deer; their hut was at the foot of the mountain, towards the north-eaſt.

We ſuffered greatly from the gnats on Nieva, and multitudes of other different flies. To preſerve us from them, we covered our faces with a kind of gauze: if this veil happened to touch the face, or to have any vacancy, in an inſtant the gnats covered us with blood. While eating, when it was neceſſary to uncover our faces, we kept in as thick a ſmoke as we were able, which we found to be the beſt remedy againſt the gnats and flies. At night eſpecial care was taken to drive them out of the tents, which were afterwards cloſed as exactly as poſſible. Their humming was heard continually about the tent; but as they could not get in, it ſerved but to lull us to ſleep. That in which I was upon Nieva being exactly ſhut, I could ſcarcely ſupport the heat it occaſioned. On Monday, the ninth, I cauſed the ſoldiers to bring firs, which they hewed on the ſide of the mountain: I inclined them againſt a rock, which was perpendicular, and about nine or ten feet high, at the bottom of which was a large rock, very even and horizontal, which ſerved me for floor and bed, in the chamber which I made with theſe trees. Our party having very hard beds in the tents, as well as myſelf, we made ourſelves mattraſſes with the little twigs of birch, which we covered with a rein-deer's ſkin; this was the extent of the ſchemes for our accommodation. I had air ſufficient in my new apartment; but the flies and gnats were to be guarded againſt: my boots, which I never pulled off, ſerved to defend my legs, and fitting my veil over my face, I managed to ſleep pretty tranquilly.

Tueſday, the tenth, in the afternoon it thundered; we had however no rain. At ſeven in the evening we perceived a ſignal, in ſhape of a pyramid, which Meſſrs. de Maupertuis and Camus had erected on Mount Horrilakero; we had already, on Sunday evening, perceived one on that called Avaſaxa. Wedneſday morning, the eleventh, we perceived a third on Cuitaperi; and on the evening of that day Meſſrs. de Maupertuis and Camus came back with their detachment.

Nieva, Kukama, and Cuitaperi, are the only mountains whoſe ſummits were uncovered by trees; on the two others, Meſſrs. de Maupertuis and Camus were obliged to cauſe a number of trees to be felled to make the ſignals viſible, which were erected on the moſt elevated ſpot. They had very bad roads through the marſhes which they had to paſs in going to Horrilakero: there they ſuffered more than on any of the other mountains from gnats; neither fire nor ſmoke could entirely drive them away; they were obliged to cover themſelves with their ſkin dreſſes, and incloſe themſelves with branches of trees, in order to take a little reſt, if it were poſſible to reſt, half-ſmothered as they were during a heat as powerful as in France. They croſſed again the ſame marſhes to reach their boats, on the bank of the river Tengelio, by which, and through lake Patimo, they paſſed into the great river Torneo; turning round the foot of Avaſaxa, where they erected their firſt ſignal, on Sunday evening.

Theſe gentlemen ſaw at ſome diſtance from the river a mountain, four leagues below Avaſaxa, which appeared to them fit for their operations: they left their boats, and by hilly and difficult roads they got to the ſummit of this mountain, which is called Cuitaperi; from it they perceived all the mountains upon which there were ſignals, and the belfry of Torneo; they erected a ſignal there, and returned to their boats. After theſe gentlemen had advanced a league on the great river, they found themſelves at the cataract of Waojenna, which is the largeſt and moſt violent of all we met with between Torneo and Pello.

It is not uſual to paſs theſe cataracts in boats, particularly Wuojenna. The Fins who conduct them take care to cauſe the paſſengers to land: their intereſt, as much as the ſafety of the paſſengers, influences them in this. They wiſh to make them ſo light as ſcarcely to touch the water, to avoid the ſtones againſt which the boat is every moment expoſed to be broke; to keep it above the billows, and to ſecure it from the waves which threaten it aſtern, while two men pull luſtily at the oars; with another the third continually ſteers it one way or another, to avoid the rocks. Sometimes, when we landed, we ſaw from the bank theſe boats half in the air, ſkimming over the tops of the waves, as if over rollers, ſo quick was their motion; at other times they ſeemed ſwallowed by the billows.

All the boats of this country, even large ones, ſuch as that which brought us to Ullea, are extremely light; they are made of planks of deal, extremely thin, faſtened to a ſkeleton, compoſed of a keel and ribs; the planks are only nailed on the ſides, they are ſewed to the keel, and to one another, for their whole length, by thread made from the nerves of the rein-deer, which is like catgut; after this the whole is well covered with pitch. Theſe ſkiffs, ſo ſlender, poſſeſs two advantages in their flexibility, which prevents their breaking when they ſtrike; and their lightneſs, which not only cauſes them to draw very little water, but renders cordage unneceſſary for faſtening them on landing; they are eaſily drawn out of the water, and are left on the beach: moſt of them are furniſhed with a maſt, which is raiſed and lowered by three lines, to carry a ſail when the wind favours. We ſaw many in which, for want of a ſail, the ſeamen had raiſed a ſmall fir with its branches on. The inhabitants need ſails in moſt parts of the river, which forms lakes, where the water is, as it were, ſtagnant, till you arrive at the ſpot where it diſcharges itſelf with impetuoſity through ſome cataract. It is in this that

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the addreſs and courage of the Fins, who are the inhabitants of the country, are particularly conſpicuous.

The danger which there was in remaining in the boat while going down the cataracts did not intimidate Meſſrs. Maupertuis and Camus; perhaps fatigue had its part in preventing their landing. M. de Maupertuis was without any apprehenſion; he amuſed himſelf in the boat with obſerving the different effects of the water, while ruſhing forward with violence: as for M. Piping, who only remained in the boat out of complaiſance, he was terribly frightened, and ſaid nothing, except that "it was no laughing matter;" but the following morning, pretending buſineſs, he returned to Torneo.

Wedneſday evening we were all aſſembled together. We began on Thurſday, the twelfth, the obſervation of the angles: we finiſhed them on Friday, the thirteenth; and it was propoſed to move. Meſſrs. Camus, Le Monnier, and Celſius, undertook to make the obſervations upon Kukama: they ſet off on Saturday morning, the fourteenth, with two ſervants, and ſix ſailors or ſoldiers, who relieved each other in carrying on their ſhoulders the quadrant, of two feet radius. Shortly after we all deſcended the mountain with M. de Maupertuis, to regain our boats on the ſide of the river: we left two for thoſe of our party who were gone to Kukama, and we embarked in the others to go up towards Cuitaperi. We landed at the cataracts of Matka and Wuojenna; it was even neceſſary to tranſport by land part of the baggage and inſtruments. It was nine in the evening when we arrived at Cainunkyla, one of the firſt hamlets of the pariſh of Ofwer Torneo, which begins at the cataract Waojenna: thence aſcending towards the north the ſpace of ſix or ſeven leagues, the river becomes very large, and is full of ſmall iſlands, covered with graſs, which is mowed. Both ſides of the river are well furniſhed with houſes, ſurrounded by ſome very verdant meadows, little fields of fine round-eared barley and rye; in many places alſo hops for making beer: ſome ſow hemp, but it grows hardly two feet high.

After taking repoſe, and eating ſome milk, at Cainunkyla, we left it at ten o'clock. We proceeded in the boat a league farther; after which we left the river to croſs the woods and rocks between it and the ſummit of Cuitaperi, which we did not reach until Sunday morning, the fifteenth, at three o'clock.

We immediately erected our tents, to ſhelter us from the fog, and a very-cold rain which fell on our journey. On this mountain, as well as on Nieva, and Kukama, we were obliged to look about a long while before we could find proper ſpots for fixing the tent-poſts; for the ſummit of the mountain is almoſt entirely covered with rocks.

Monday, the ſixteenth, at ſeven in the morning, the fog had diſperſed: we mounted the eighteen-inch quadrant on its ſtand, and made ſome obſervations. Comparing the angles taken upon Nieva with this little quadrant, with thoſe taken with the two feet quadrant, we found a difference; by examination we diſcovered the cauſe. The little quadrant gave for the circle of the horizon 360° 4′, while the other gave exactly 360°. M. Langlois, known for his ſkill and exactitude in the conſtruction of mathematical inſtruments, made them both; and I owe him the juſtice to ſtate, that the one of two feet radius was as perfect as can poſſibly be made.

M. de Maupertuis, who conſiders no impediment when truth is to be obtained, deſcended with M. Clairaut from Cuitaperi, to return to obſerve on Nieva with the little inſtrument of eighteen inches: I left it at the ſame time with M. Helant, to go towards the north, in ſearch of mountains fit for continuing our triangles. Meſſrs. Sommereux and Herbelot remained on Cuitaperi.

Monday, at eleven at night, we left our boats near the houſes of Marcoſari, to proceed to the neighbouring mountains of the ſame name: we were there almoſt devoured by

by gnats, which ſcarcely allowed us the liberty of examining the neighbourhood. We returned to our boats, aſcending the river as far as the mountains of Kattilla, which we went up: we viſited three of their ſummits, and thence perceived another mountain towards the north, which ſeemed perfectly adapted to our operations, but which was entirely covered with trees. Our ſailors told us it was Pullingi, and we immediately reſolved on going there.

While our ſailors with great difficulty got the boats up the cataract of Kattilla, we proceeded on foot along the bank; and here it was I firſt paſſed the polar circle. It was nearly ſeven in the morning when our boats received us above the cataract: we found the river ſtill fine and ſpacious, ſome very good fields on its ſides of excellent rye, barley, and hops, near the hamlets of Komnus, Hiougſing, and Rattas. We got out of the boat again to examine the mountains of Rattas, but found they could be of no uſe to us. We left them at noon, and arrived by two o'clock at Lambiſen Nieva: we found there a comfortable houſe, where we left a part of our things in order to get to Pullingi, through the woods and marſhes, with greater facility. It was two leagues diſtant; we attained its ſummit at ſeven o'clock, exceedingly tired; the gnats tormented us here more than any where before: beſides theſe, the air was full of extremely ſmall flies, whoſe ſtings drew blood. In order to eat our bread, for we had nothing elſe, we were obliged to be very quick in paſſing our hand under the veils which covered our faces; without this precaution we ſhould have been covered with blood by their ſtinging, and have ſwallowed as many of them as crumbs of bread. M. Helant and I were by ourſelves, with ſix ſoldiers or ſailors: we enveloped ourſelves both together in the cloth of a tent in ſuch a manner as to leave no entrance to the flies, and ſeated ourſelves near a large fire in order to ſleep.

The eaſtern extremity of Pullingi is the moſt elevated part of the mountain, but covered with fir trees of a much larger ſize than any which we had hitherto met with. From the top of a tree I diſcovered Avaſaxa and Horrilakero, and I determined on erecting a ſignal; but it was neceſſary to fell beforehand a part of the trees. Our ſix men were employed about it inceſſantly, and the ſignal was raiſed on Wedneſday, the eighteenth, at four in the afternoon; we then retraced our way to take our cloaths at Lambiſen Nieva, and re-aſcend the river in our boats. We were ſo much fatigued, that we did not land on going down the cataract of Kattilla, which in truth is not the moſt dangerous; and at nine in the evening we left the frigid for the temperate zone. We afterwards deſcended the cataract of Sompa, and continued our route till Thurſday morning, the nineteenth, at five o'clock, when we arrived at the top of Cuitaperi, where we were all collected together. All the morning it continued raining; in the afternoon the obſervations, begun by the gentlemen whom we joined, were continued; they were completed on Friday, the twentieth.

M. Meldecreutz, who left Stockholm with a deſign of accompanying us through our operations, preferred travelling with M. de Cederſtrom through the country, not to ſay the deſarts; for to the north of Pello few habitations are to be met with. As ſoon as they arrived at Torneo they ſet off going to the ſources of the river, and the lake of Torneo; they even ſaw the north ſea. M. de Cederſtrom, on leaving us, propoſed to us this journey; but M. de Maupertuis with the whole party were of opinion, it would be better to begin the work which formed the ſubject of our voyage.

M. Meldecreutz, on his return, learnt we were upon Cuitaperi; he came there. M. de Maupertuis behaved with great civility towards him; but as he had not thought proper to begin the work with us, we paid no attention to the inclination he manifeſted of continuing it with us, and he departed to join M. de Cederſtrom.

At four in the evening we ſent down all our baggage, and at ſeven we embarked in ſix boats, each conducted by three men, to proceed to Avaſaxa, on whoſe ſummit we arrived at midnight. After having pitched our tents, and taken food and reſt, on Saturday, the twenty-firſt, we came down the mountain to go to Ofwer Torneo, or rather Sarkilachti, to ſee M. Brunius, paſtor of Ofwer Torneo, and M. de Guilingrip, governor of the province, who was at his houſe. We were very well received; we dined there; and he promiſed to come the next day to dine with us. If we had to ſuffer from the flies and the heat, we had yet the conſolation of perfect freedom as to our dreſs; we were in our jackets, with Finniſh ſhoes, a kind of leathern ſocks; we dreſſed as we pleaſed, in ſhort, and no one looked upon it as extraordinary. We received the governor and all his retinue in the ſame dreſs. Our tents were too little; we could not ſhelter ourſelves from the ſun under them; we therefore made our ſoldiers build a dining-room with trees and leaves, furniſhed with a table and benches; we had there the remainder of our wine, and there it was finiſhed.

It is difficult to deſcend the mountain. After having got down through a little wood, we met with large and ſlippery rocks, lying very unevenly; afterwards we entered into a foreſt which ſtretched to the foot of the mountain, where we found the river Tengelio, which on three ſides runs round it, and afterwards empties itſelf into the great river Torneo. In going up and down theſe mountains, notwithſtanding their difficulty, two of our ſoldiers, marching with a ſteady pace, carried on their ſhoulders our two feet quadrant, and ſo by two and two our baggage and proviſions: they never objected to the labour, although it was inceſſant. Notwithſtanding their fatiguing work, theſe Fins ate very little; a few dry fiſh, which they carried in a bag, made of the bark of the birch tree, and which hung at their ſide, with a caſk of ſoured milk, was all their food and beverage. They ſometimes have a little barley-cake, extremely dry, and as they empty their caſk of ſour milk, they repleniſh it with water.

The inhabitants of the neighbourhood came to our mountains in flocks: many of them offered their boats and their ſervices; we gave two thalers per day to each man, which is about twenty-four ſols French money, very high wages for that country. The ardour which inſpired them to ſerve us engaged ſome to buy their places of thoſe who brought us from Torneo; others brought us milk, ſheep, or fiſh. On the two firſt mountains, Nieva and Cuitaperi, we ate a quantity of freſh ſalmon: we bought one at Cuitaperi, three feet ten inches long, for which we paid three livres, and the ſeller thought it a great deal; he would not have obtained for it more than forty ſous from his country people.

Pullingi was the only mountain on which we had a ſignal towards the north, and another was to be found to continue the triangles further. For this purpoſe, I ſet off with M. Helant and ſix ſoldiers, in two boats, on Sunday, the twenty-third, at eight in the evening. We embarked on the river Tengelio; we croſſed the lake Portimo, and continued yet on the river until three o'clock in the morning: we then left our boats and went acroſs the marſhes and foreſts to mount Horrilakero; we made the ſignal larger, to be the better perceived. From thence I examined the mountains which are perceived beyond, but which appeared confounded, and piled one upon the other. Our ſoldiers told me, that one which appeared the moſt likely for our purpoſe was called Lango, but was very diſtant; that they knew it, and could lead us to it. We were not ſufficiently well provided with food to go ſo far into a deſart, where there were no habitations; we therefore came back to Avaſaxa, reaching it on Monday night.

We always landed while the boat was worked through the cataracts in the Tengelio: the ſailors made uſe of a different method here to that uſed in the Torneo; inſtead of

rowing in the cataracts, they held faſt with their poles, and oftentimes got out of the boat and held it by the ſides, in order to get between the ſtones which fill the bed of the river, and cauſe the cataracts.

After conferring with M. de Maupertuis and the reſt of his company, and having taken ſome proviſions, we departed anew, M. Helant and myſelf, with our ſix men, on Tueſday, the twenty-fourth, in the afternoon, at two o'clock, and after re-aſcending the Tengelio, and croſſing the lake of Portimo, by ten at night we arrived at the cataract of Luonion, at the bottom of which we leave the river when going to mount Horrilakero. We walked up this cataract, and at midnight were in the middle of lake Maiama Lombole*. We paſſed through lake Lohi in a thick fog, and arrived on the twenty-fifth, at three o'clock in the morning at the houſes called by the name of the lake Lohi Jerfwi. All the family were aſleep there in the middle of a very dirty chamber, which is called Porti: we entered into a ſimilar room, where we ate ſome freſh eggs. This was the only inhabited houſe we met with beyond lake Portimo: ſome huts are met with, but they are no other than places of retreat for the fiſhermen, who in the ſeaſon go as far as theſe diſtant lakes. The inhabitants arrange among themſelves the diſtribution of the fiſhery, and every one has his own fixed ſtation.

We left the place at five o'clock, paſſed the cataract of Peſſa, and the lake of the ſame name, and after continuing our route pretty far into the great lake Miecko, we found ourſelves at the foot of mount Ketima: we went to the ſummit of it; and as I perceived Horrilakero and Pullingi, upon climbing a tree, we ſhould immediately have raiſed a ſignal there, if I had not imagined that mount Lango would be a more advantageous ſpot.

We therefore returned to our boats, and ſet off at three o'clock in the afternoon to proceed further. We had a favourable wind, and hoiſted a ſail during the remainder of our paſſage along the lake; but at the cataract Lango, where there was but little water, we were obliged to get up it from ſtone to ſtone with much difficulty on foot, the wood on the ſides being ſo thick as to prevent our paſſing through it. Our ſailors had a ſtill harder taſk to get their boat up. Above the cataract we embarked again on lake Lango, and at ſeven at night we had got up the mountain of that name, eaſt of the lake.

On the twenty-ſixth we were ſo greatly fatigued that we quickly fell aſleep, laid by a fire upon the rock. In vain did I travel over all the mountain; I could not diſtinguiſh any of the others on which the ſignals were placed; our ſoldiers had made a miſtake at Horrilakero, and taken ſome other mountain for that of Lango. We conceived nothing to be better than to return to Ketima; but on entering lake Miecko again, we ſaw on its weſtern ſide mount Pieſka, which promiſed to be of ſervice. At ſix o'clock, with much trouble, we got up it, for it is very rugged on the ſide of the lake; the top is entirely covered with large firs, and here we were greatly plagued by gnats; we were only free from them when we had climbed up one of the largeſt trees, from which we could diſtinguiſh nothing.

When we had determined on climbing this tree, as it was lopped too much, our Finns felled another in a little time, and ſtripping it of its branches, made notches all along one of its ſides, which ſerved us as ſteps to aſcend its higheſt branches.

We then returned, on the twenty-ſeventh, to Ketima. Before we aſcended it, we ſupped on the ſide of a lake, in order to take advantage of its water, and towards midnight we walked up to the ſummit of the mountain. We pitched a tent, which it

* Lombole, Jerfwi, and Ripi, are three different denominations of lakes in the Finniſh language; Jerfw ſignifies a lake ſimply; Lombole a very long lake; Ripi, a ſmall lake.

was not long before we needed; it rained, with thunder, till nine in the morning: our ſoldiers ſheltered themſelves from it as well as they could with the ſails of their boats.

Immediately after the rain we began felling the trees, which was continued all day long. While our men were ſo occupied, I went down the mountain with M. Helant to drink, in the afternoon, at the lake, and to fetch water for ourſelves and the ſoldiers. We ſaw for a long time from the ſide of the lake a large animal, which was ſwimming a great diſtance from us: our ſailors told us it was probably a large pike; they were not ſo viſionary as a number of the inhabitants, who take them for ſpirits, called by them Haltios: others ſay they are bears, who ſwim towards the boats for the purpoſe of overturning them, and devouring the men in them. Scarcely had we re-aſcended the mountain, when we ſaw M. de Guilingrip with ſix boats croſſing the lake: he was going into theſe loſt countries in ſearch of mountains containing iron.

We ſaw a ſingular appearance in the ſky at ſeven o'clock, as the ſun ſhone from the N. W. there appeared in the rain which was falling in the S. E. three rainbows, the colours of the internal and external of which were vivid; of the middlemoſt, which was parallel to the internal one, and which biſected the external, the colours were not ſo lively.

On the twenty-eighth, at night, it rained heavily with thunder, after which we conſtructed the ſignal, and continued ſtripping the mountain till four in the afternoon. We deſcended and re-embarked, and after two hours which it took to croſs the lake, we again entered the river. Fortunately we arrived by eight o'clock in the evening at the houſe of Lohi Jerfwi, where we ſheltered ourſelves from the rain, which fell in abundance throughout the night, accompanied by dreadful thunder. We ſlept upon heaps of new-mown hay, the beſt bed we had met with ſince we left Torneo.

We did not leave this place till near ten in the morning, to continue our journey towards Avaſaxa, where we expected that M. de Maupertuis yet remained. Our proviſions failing, we proceeded to the houſe of Portimo, on the lake of that name, to try what we could find to eat: we met with bread, or rather dry barley-cake, made half of ſtraw; extreme hunger made this appear delicious. We reached the top of Avaſaxa at ten o'clock, as thoſe gentlemen were returning from the houſe of M. Brunnius. The length of my voyage had given them time to make their obſervations: they had not been able to ſee the ſignal on Ketima, and waited for our return, in order to determine on the courſe we ſhould take.

Mount Avaſaxa is ſituated in the beſt peopled and fineſt part of the river: its bed, above all, towards the ſouth, for the ſpace of four or five leagues, is extremely wide, and offered the moſt proper ſpot we could deſire for an excellent baſe, whoſe extremities would be viſible from Cuitaperi and Avaſaxa. This baſe could not be meaſured at any other time than in winter over the ice; but it ſuited to fix upon it, and erect ſignals at its extremities, to join it to the triangles, and to make the neceſſary obſervations before winter came on.

Monday, the thirtieth, ſhortly after noon, we all came down from Avaſaxa: Meſſrs. Clairaut and Camus took upon themſelves to determine the direction of the baſe, and its extremities; and M. de Maupertuis with the reſt of his party embarked in five boats to go to Pullingi. At nine at night we landed to get up the cataract of Kattilla, which is interſected by the polar circle: our ſeamen took us to Hiougſing, on the weſtern ſide of the river, to a good houſe, where we ſupped; we found there good barley-bread, dry fiſh, milk, cream, butter, and cheeſe, and were ſerved in a very cleanly manner.

We left this houſe at eleven o'clock, and inſtead of going to Lambiſen at Pullingi by land, we went on in the boats to the little village of Turtula, and from thence to the

mouth of the river Keutas, which is not navigable. We left our boats on the banks of the great river, and proceeded on foot to the ſide of Lake Keutas.

The thirty-firſt. Ordinarily they have a little boat on each lake to fetch the hay mowed in the marſhes; on this lake we found two, and we made uſe of one on ſeveral expeditions to the foot of the mountain of Pullingi. We had much trouble to reach the ſummit; it is very ſteep, and at every ſtep we made, we were up to the knees in moſs. The mountain itſelf is the higheſt of all thoſe on which we went, and incomparably the moſt peſtered with gnats and flies. What we ſuffered there from theſe inſects is inconceiveable: the Fins, our ſoldiers, of the regiment of Weſtro-bothnia, men as courageous as indefatigable, and inſenſible to the intemperance, and inconveniencies of the weather, were not able to hold up againſt them; but were obliged to cover their faces with pitch. The ſervant given to us by the ambaſſador had his head prodigiouſly ſwelled by their ſtinging. M. Le Monnier, alſo had great difficulty in ſupporting this continual torment, and his health was very much hurt by it: a diſguſt of the food we ate, did not a little contribute to his illneſs. We found in the little village of Turtula plenty of mutton, milk and fiſh; but ſcarcely were they ready, and withdrawn from the fire, than they were quite black from the little flies which covered them. During our three firſt encampments we were obliged to go down the mountain to the river, to obtain what water we wanted; at Pullingi, we found a fountain towards the S. W., on the declivity of the mountain. We found there alſo an abundance of a ſmall black fruit, which they call blober; the plant on which it grows is ſeven or eight inches high, and the leaf ſimilar to that of the myrtle; the fruit conſiſts of ſmall black grains of the ſize of juniper berries: this fruit is met with in France. All day Tueſday was very fine: we diſcerned very well the ſignals of Avaſaxa, Horrilakero, and Ketima; but other ſignals were requiſite towards the north.

On the firſt of Auguſt, M. de Maupertuis had met with a ſerjeant or ſubaltern of the regiment of Weſtro-bothnia, at Avaſaxa, a well informed active man; he engaged him to accompany us to Pullingi. The day after we arrived there, this officer, M. Helant, and myſelf ſet out towards the north to ſeek for ſome mountain, whence we might diſcover at leaſt Pullingi and Ketima, if we ſhould not be able to diſtinguiſh as well Horrilakero. We went to the moſt northern houſes of Pello, and we got down to that of Corten Niemi, by two in the afternoon, where we dined. We made every poſſible ſearch; for this no one could be better adapted than our officer: no inhabitant, not even the maſter of Corten Niemi, who did not want for intelligence, could give us any ſatisfactory information.

At laſt after having examined all the neighbouring mountains which are low, we found nothing to anſwer our purpoſe better than the little mount Kittis: we eaſily diſcerned Pullingi from it; but could not perceive either Ketima, or Horrilakero. We ſaw other mountains to the eaſt of Pullingi; but one gave them one name, another a different one, and were as little agreed about the roads which led to them. We ſhould have gone farther towards the north, if after going up to the ſummit of Kittis, we had perceived ſome higher mountain more advantageous; but none was viſible, and the direction of the river ſwerved greatly from that of the meridian, and ceaſed to continue favourable to our operations. On the ſecond we determined therefore on conſtructing a ſignal on the higheſt part of Kittis; we cauſed all the trees to be felled which might hinder the ſight of it from Pullingi, and the mountains which we ſaw to the S. E. As we foreſaw that our ſignal would appear almoſt overwhelmed by the ſurrounding country, in order to render it more viſible, we put in practice a ſuggeſtion of M. de Maupertuis, it was to ſplit the trees which we uſed for building the ſignal, and to place the

internal

internal ſplit part outwards, in order that its whiteneſs might make it diſtinguiſhable with eaſe.

We returned to our boat, on Thurſday the third, at eight o'clock in the evening, and arrived on Friday morning at one o'clock, at the ſummit of Pullingi. After having related to Meſſrs. de Maupertuis, Le Monnier, and Celſius, the difficulties we had met with, and after informing them that beyond Kittis, no place was viſible proper for continuing the triangles, that the river did not even continue from the ſame direction, its courſe being from a great inclination towards the weſt; we reſolved in concert to ſet off immediately in ſearch of ſome mountains to the eaſtward, from which we might diſcover Pullingi, Horrilakero, or Ketima, and Kittis. We then at noon left Pullingi. M. Celſius had inſtructed the Swediſh officer in what was neceſſary for making good triangles: this officer with ſix ſoldiers went towards the S. E., while M. Helant and myſelf went with ſix ſoldiers to the E. N. E. We paſſed through the village of Turtula, where they were reaping ſome very fine barley; and after going through a ſhort diſtance of wood, intermixed with marſhes, we embarked on lake Pamas: we continued a little forward into the river Hanki, having marſhes in the woods at its ſides, and afterwards having walked for a long time amid woods and marſhes, we found Mount Kukas, the ſummit of which we reached at nine in the evening. Immediately we made a great fire; this was always our firſt meaſure on account of the gnats, and after taking, with a compaſs, from the tops of trees, the directions of Horrilakero, Pullingi, and Kittis, the ſignals on which I diſcovered, on the fourth, we cauſed thoſe trees to be felled which were in the ſuitable directions, ſo forming avenues in the midſt of which the ſignal was placed, whence we perceived Horrilakero, Pullingi, and Kittis. We did not finiſh till Saturday at ſix o'clock: we then returned to our boats; and by the lake Pamas, entered the river of that name; there was ſo very little water that every inſtant we were obliged to get out of the boat, and leap from rock to rock, for the river is full of them. We did not get to Turtula until midnight. We took up our abode with a rich farmer, whoſe houſe is called Martila. M. Helant threw himſelf on a bed, for my part I preferred ſleeping on a bench with which all their chambers are furniſhed, going entirely round, and of a good breadth. We left this place on the fifth, ſhortly after four o'clock in the morning, and reached Pullingi by ſeven o'clock.

All day, Sunday, the weather was delightful, and very few flies; the obſervations were continued; the ſignal upon Kittis was diſtinctly ſeen, as well as that I had conſtructed upon Kukas; and two which the Swediſh officer had erected, the one on Niemi, which was employed in the triangles, and the other on Mount Alpus. This laſt would have made a better triangle, but it was not diſtinguiſhable from Kittis. The two conſtructed by M. Helant and me upon Ketima and Kukas, were not uſed, Niemi being more advantageous than Kukas, ſeeing that Kukama was ſeen from it, and that it thence completed a heptagon.

On Sunday evening we began ſending down our baggage, and at ſeven o'clock in the morning of Monday, the ſixth, we all went down to embark on the Lake Keutas, and proceed in our five boats to the ſide of the great river.

The river Keutas is not navigable, as well from want of water, as from what there is being employed for turning a ſaw mill; this mill is as ingeniouſly contrived as thoſe in France; after the log or trunk of a tree, which is placed to be ſawed has advanced to its whole length, and it has been ſawed through from one end to the other, the motion of the water carries it back again to receive a ſecond ſawing. In other places on theſe little rivers, they have very ſmall mills for grinding grain, which have only one horizontal wheel turned by the water: the ſtones placed on the ſame axis are very ſmall, and make

no

no more revolutions than the water wheel: it only cruſhes the grain very coarſely, with the ſtraw which is mixed with it to increaſe the bulk. There is one of theſe mills on the Tengelio, below Lake Portimo; they have ſome, the water wheels of which are vertical, but as ſmall as the former, and which grind no better: we met with one in going from Karungi to Kukuma, on the little river Muſta, in the middle of the woods; M. Piping has a ſimiliar one at Torneo: N. of Torneo we met no longer with windmills.

The health of M. Monnier was far from being re-eſtabliſhed: notwithſtanding he made, beſides obſervations of the angles, ſome on the meridional elevation of the ſun, in concert with M. de Maupertuis and Celſius; and obſerved an eclipſe of Aldebaran by the moon, which was uſeful in aſcertaining the difference between the meridians of Pullingi and Paris. To get better it was neceſſary he ſhould be more comfortably lodged, and above all receive nouriſhment of a leſs diſguſting nature than flies. In vain did M. de Maupertuis uſe the moſt preſſing intreaties to induce him to remain at Turtula, where he would have had very comfortable accommodation at the farmer's of Martila; or to deſcend the river to Ofwer Torneo, and go to the houſe of M. Brunius, where he would have found Meſſrs. Clairaut and Camus; he inſiſted abſolutely on accompanying us to Pillo. We therefore all went on board, and at noon found ourſelves cloſe to a large even rock, on the weſtern ſide of the river, on which we dined. The inhabitants call it Pellon Pyta, which in the Finniſh language ſignifies the table of Pillo; it is a practice among them on going up the river to make a meal there before they aſcend the cataracts: theſe were not ſo full of rocks, as the cataracts of Katilla, and the others lower down; nevertheleſs the river is very rapid, and they are not got up without difficulty.

We landed at the houſe of Saukola the moſt northern of Pillo, and the neareſt to Kittis. We arrived at our ſignal at five o'clock: the weather was delightful; we obſerved the angles between Pullingi, and Niemi, and Kukas, as well as the elevation of the ſignals. We ſlept on the monntain, and the next day took the meridional height of the ſun. We made ſecure here as in every previous inſtance of the center of the ſignal by different marks, and lines of trees and neighbouring rocks, by ſtakes deeply ſunk, in order to find it again, if by any accident, and above all by fire, it ſhould happen to be deſtroyed. We found a number of ſmall flies but fewer gnats on this mountain.

At four in the afternoon, we went down Kittis to viſit the houſes of Corten Niemi, and Purainen, and to know if the owners could furniſh lodgings for us, when we returned to make the celeſtial obſervations. The houſe of Saukola would have been nearer to the mountain, but it was not fit for us, while here we found two ſufficiently commodious rooms in each of theſe. We went on board at five o'clock, and arrived at Turtula at eight, where we ſupped, and ſlept at the houſe Martila. Were it not for the ſmall gnats during the night, it would have been pleaſant, the weather being charming: they had juſt gathered in their hay here, as well as at Pello, and were about the end of their barley harveſt. We began to ſee ſmall birds ſuch as ſparrows and finches; till now we had ſeen none but ſwallows. Many more ducks were ſeen on the river. After leaving Torneo, we met no longer with any domeſtic fowls, unleſs at the houſe of M. Brunius. The country people faſten to the bottoms of trees, logs of wood or trunks of trees hollowed, to attract certain large birds, who come to theſe places to lay their eggs, which they take and eat. The ſun ſet at nine o'clock, and at midnight there was ſcarcely ſufficient twilight to read.

On the eighth, I joined M. de Maupertuis, and we perſuaded M. Le Monnier, who was in a very languid ſtate, to go to reſt himſelf, and recruit his health at Ofwer Torneo; Meſſrs. Sommereux and Helant accompanied him; and ſent their boat back to Turtula,

tula, to be of uſe to us on our return from Niemi, where Meſſrs. de Maupertuis, Celſius, and myſelf, went to make obſervations with the quadrant of two feet.

Niemi is the mountain on which the Swediſh officer erected a ſignal; he went there with us to ſerve as an interpreter, underſtanding the Finniſh, as well as the Swediſh language.

Wedneſday, at ſeven o'clock in the morning we left Turtula, and we went to ſome diſtance to embark in three of thoſe little boats which the inhabitants have in almoſt every part, for fetching fodder from the marſhes: ours we left on the banks of the great river; they would have been too large to be any ways of uſe on the little river Pamas, on which we had great trouble in paſſing even the ſmall boats which carried us between the rocks; and from which we were frequently obliged to get out in order to ſtep from ſtone to ſtone. At length we entered Lake Pamas, which I had croſſed before with M. Helant. The water of it was not clear; it was entirely filled with ſmall, round, yelloviſh grains reſembling millet; and which M. de Maupertuis took to be the chryſalides of gnats, or of thoſe little flies with which the air ſwarmed. Our ſailors told us this was always the caſe during the autumn, and that at other ſeaſons from the time of the melting of the ice, the water of the lake was perfectly clear.

We left the lake by the river Sika, which we went up in our boats, and afterwards left.

After about an hour's walking through the woods, we came to the little lake Kaſſuri, on which there was but a very ſmall boat and a raft: we loaded them with our baggage and quadrant, and went on foot round its ſide, through the wood which was ſo thick, that we were obliged to cut our way. There was beſides a very high moſs, which covered many trunks of trees blown down by the wind, in ſuch ſort that we never knew where we placed our feet, and frequently thinking to be walking on higher ground we ſtepped into a hollow; we walked on this in manner for two hours, and arrived at length at the ſide of a great lake on which were two boats: we loaded them with our baggage and inſtrument to be tranſported to the foot of Mount Niemi, which is waſhed by the other extremity of the lake, nearly a league long. Our ſailors brought the boat back to take us over, and not having any ſail they ſubſtituted branches of fir. At length before four o'clock we had attained the ſummit of Niemi.

The lake which we paſſed is called Ajangi; it is at the N. of our mountain, and communicates with other lakes at the S. of the ſame. We ſaw on this lake towards the South ſome vapours riſe, which ſome of the inhabitants take to be ſpirits, and call them haltios. The ſoldiers who ſerved us both as workmen and ſailors were not ſo credulous.

M. de Maupertuis was delighted with Mount Niemi: I ought not to ſay any thing after the deſcription he has given of it, in his work on the *Figure of the Earth*. It is true the objects ſeen there form a contraſt, a variety, which preſent a ſpectacle equally agreeable and ſingular. It might be thought nothing but bears and wild beaſts ſhould be met with in a place ſo diſtant as four or five leagues, from any habitation, and loſt as it were, amid woods and lakes; nevertheleſs we ſaw there nothing but the haltios which I have before mentioned.

The remainder of the day the horizon was much loaded with vapour. On Thurſday the ninth, thunder and rain interrupted our obſervations during the whole day. Friday the tenth, foggy all the morning, and the remainder of the day rain, which prevented our work.

The weather was fine when we left Turtula. We reckoned upon its continuance, and that at the lateſt our obſervations would be finiſhed by Friday. Neither ourſelves nor our

our ſailors had laid in proviſions for more than two or three days; in the mean time we had no proſpect of fair weather, and had already begun to divide the proviſions which we had remaining among our ſoldiers: we therefore diſpatched five of them to Turtula on Friday evening for victuals for us and for themſelves.

Saturday, the eleventh, the weather becoming fine, we began our obſervations at three o'clock in the morning, and they were completed before noon: we ſent our baggage down to the foot of the mountain, thinking that the ſoldiers ſent to Turtula would make haſte back. The boats returned, and we embarked at five in the evening: we had difficulty in croſſing; a very violent contrary wind had roſe, and the boats were not found; the ſailors took the precaution of keeping cloſe to the ſide, to be under ſhelter from the wind by the foreſt. It was ten o'clock before we reached Turtula: we ſupped at the farmer's at Martila, and although there were two empty beds, Meſſrs. de Maupertuis and Celſius ſlept in a tent, which was pitched before the houſe; and as three could not commodiouſly ſleep in it, I returned to ſleep on the bench which had been my bed before.

M. Le Monnier had ſent back the boat which carried him to Ofwer Torneo, and we had five on the bank of the great river. We went on board them with all our baggage on Sunday, the twelfth, at nine in the morning, and arrived ſomewhat before two o'clock at Ruktula, where we dined. We afterwards croſſed the river to go to the houſe of M. Brunius, the paſtor of Ofwer Torneo: we found at the water-ſide Meſſrs. Clairaut and Camus, with M. Le Monnier, who was much recovered. The weather was delightful, and the air free from flies; together we took rather a long walk, entertaining ourſelves with plans for ſpending the winter at Torneo: we met all at M. Brunius's, who with much politeneſs offered us his houſe.

M. de Maupertuis willingly took upon himſelf whatever was laborious, and inſiſted upon every one faring better, or leſs ill than himſelf. I did not ſpare myſelf, particularly when I had to accompany him; notwithſtanding he obliged me to remain at M. Brunius's to take repoſe. I ſtopped with Meſſrs. Le Monnier, Sommereux, and Herbelot, who had remained there ſince their departure from Avaſaxa; and Meſſrs. de Maupertuis, Clairaut, Camus, and Celſius, departed on Monday, the thirteenth, at nine in the morning, to make obſervations on mount Horrilakero.

Meſſrs. Clairaut and Camus had determined the baſe, and cauſed a ſignal to be conſtructed at each of its extremities. Meſſrs. Le Monnier, Sommereux, and myſelf, after dinner took a walk to the ſignal at the northern extremity of the baſe; we ſecured the centre by different directions taken from the neighbouring trees, which we marked, that we might know its poſition again, in caſe of any accident; and as we could not ſee the ſignal on Avaſaxa from this one, on account of the trees on the ſummit of that mountain, I went up it with two ſailors in order to fell them. I rejoined Meſſrs. Le Monnier and Sommereux, and we returned together to the houſe of M. Brunius.

I went by myſelf in the evening to take a walk on the little mountain Sarki Wara, which joins the Preſbytery; from the top of it I had a moſt beautiful view towards the the ſouth, along the courſe of the river as far as Kainenkyla; the weather delightful, and no gnats.

M. Brunius returned from Hieta Niemi, a chapel of eaſe to Ofwer Torneo: we ſupped with him and Mad. Brunia: he exerciſed the functions of curate, and expected to ſucceed his father in the rectory of Ofwer Torneo, who was blind and incapacitated from fulfilling his duties.

Tueſday, the fourteenth, at nine in the morning, I ſet off alone with three ſailors in a boat to go to the ſouthern extremity of the baſe, in order to ſecure the centre of the

ſignal: I could not effect it by directions taken from tree to tree, for there were none except what were very ſmall; but I made a more certain mark by the means of a great rock which was near the ſignal.

We paſſed the day of the Aſſumption of the Bleſſed Virgin, (whoſe feaſt is not held in Sweden) very tranquilly. M. Brunius kept company with us almoſt all the day: we entertained ourſelves in talking Latin with him. Juſt as we were all in bed, at eleven o'clock, M. Camus returned from Horrilakero, to go the next day to Kukuma, in order to rebuild the ſignal which the winds had blown down. He took ſome reſt; and Thurſday morning, the ſixteenth, we both ſet off, with a ſervant who ſpoke Swediſh, and nine ſoldiers, one of which alſo ſpoke Swediſh. We embarked in three boats, of which we left one at Hieta Niemi: two being ſufficient for us, a third would only have embarraſſed and detained us in paſſing the cataracts.

M. Camus and myſelf were in the ſame boat, in which we kept going down the cataracts. At that of Waojenna, a wave on the ſide where I ſat ſpent itſelf over the boat and almoſt covered me with water. We were obliged to keep ourſelves in a poſture almoſt lying, in order that we might not hinder the pilot from ſeeing the rocks, which he continually avoided by the means of the rudder, while two Fins rowed with all their might: in ſome places, however, they ſuffer the boat to fall down the ſtream guided only by the pilot. The cataract Matka was quite as terrible as the firſt: we were, as it were, buried amidſt the waves, but this was of ſhort duration. We arrived at Korpikyla at three in the afternoon: we ſtopped more than two hours at a farmer's; we dined there, as well as our ſailors, who required a little reſt.

We got to the top of Kukuma by ten o'clock: the heat and almoſt continual rays of the ſun had ſomewhat dried the marſhes, and we found the road pretty good. A rein-deer belonging to the Lapland girls who lived at the foot of mount Nieva took a liking to us, and followed us in ſpite of his miſtreſs, who could not prevent him: he ſtayed on mount Kukuma all the time we remained there. The nights began to be cold, and we paſſed this near a great fire. At three o'clock in the morning of the ſeventeenth we ſet to work to re-eſtabliſh the ſignal; we ſet off at nine o'clock, and arrived by noon at Korpikyla.

The rein-deer came back with us, and returned to his miſtreſſes, who had five or ſix others. We aſcended the cataracts on foot; the waters were very low in them, and the navigating through them incommodious: we got into the boats again at Kainunkyla, and arrived at M. Brunius's, where all were in bed except himſelf, who was returning from fiſhing at midnight.

Saturday, the eighteenth, was very fine, ſcarce any gnats or ſmall flies; there were only a few flies remaining ſimilar to thoſe we meet with in France. Meſſrs. de Maupertuis, Clairaut, and Celſius, returned from Horrilakero at five in the afternoon, and we were all met together. In the evening we perceived a fine aurora boreâlis.

On Sunday, the nineteenth, ſome of our party going to church, where there was a ſermon, were aſtoniſhed to hear the ſobbing of the audience, affected by the diſcourſe of M. Brunius. On their return from church, it was ſaid that the foreſt of Horrilakero was on fire; this turned out but too true: after dinner we ſaw from the top of Avaſaxa the ſmoke of the fire; it even prevented our obſerving the angles of the extremities of the baſe, or ſeeing Horrilakero. We were obliged to ſend an expreſs there to know if the ſignal was not damaged; as for the reſt, the weather continued fine, and the nights rather cold. Meſſrs. de Maupertuis, Celſius, and myſelf, notwithſtanding ſlept on the mountain. Meſſrs. Clairaut and Camus went to M. Brunius with M. Le Monnier, as yet convaleſcent: they found M. Herbelot there, who on taking a trip in a boat was

near

near being drowned: as all the ill that followed the accident was only his fear, we did nothing but laugh at it, and kept ourſelves alive by our gaiety.

Monday, the twentieth, the ſmoke was ſtill thicker; it was diſtinguiſhable in every quarter. In dry weather, as it was then, the mountains of the country often take fire, which communicates in an inſtant to the dry moſs, and ſpreads prodigiouſly; ſometimes three weeks elapſe before it is extinguiſhed. The ſmoke of theſe fires extends over the gulph, hides the beacons from the pilots, and frequently cauſes ſhipwreck. This ſhewed us how wiſely we had acted in not loſing time in Sweden and at Torneo, and in nearly completing our trigonometrical obſervations before this ſmoke was common, which would not allow the perception of diſtant objects, ſuch as the points of our triangles were. Meſſrs. Clairaut and Camus returned in the evening to ſup and ſleep with us on the mountain.

Tueſday, the twenty-firſt, the expreſs ſent to Horrilakero having reported that the ſignal there was burnt, Peter, the ſervant which the ambaſſador gave, an intelligent man, and who knew the centre of the ſignal, departed with ſix men to re-conſtruct it. We never failed to take exactly the centre of our ſignals, and in the obſervation of the angles to make the interſection of the two reflectors of the inſtrument anſwer to it. When we left a ſignal, if it was on a rock, we made a mark at the centre on the rock; and we made more ſure of it, by taking its diſtance and direction from certain neighbouring trees and rocks, of which frequently we preſerved a copy in the regiſter of our obſervations. If the ſignal was placed on the ground, or we were any ways able to drive a ſtake in at the centre, we did ſo, and on leaving the place we covered it with a large ſtone; it is thus we had acted at Horrilakero.

Madame Brunia ſent to us on the mountain a diſh of haſhed meat, and one of green peas; but they were ſo much ſugared and ſeaſoned with lemon-peel, according to the taſte of the country, that we could not eat it.

At four o'clock in the afternoon the ſmoke was diſperſed, and we took the two angles remaining. At nine o'clock we went down to ſleep at M. Brunius's, where we found letters announcing the arrival of the ſextant, which M. Celſius had ordered in England, and which was to ſerve us to examine the diſtances of ſome ſtars from the zenith.

The next day, Wedneſday, the twenty-ſecond, early in the morning, we all went to the northern ſignal of the baſe: we cauſed it to be rebuilt in as ſolid a manner nearly as the houſes of the country are wont, preſerving in a ſcrupulous manner the ſame centre. We had only to take the angle between Avaſaxa and the ſouthern ſignal of the baſe, and were not able to effect this, owing to the ſmoke, till four in the afternoon; we were even obliged to ſend a man to ſpread a very white cloth over the ſignal. At nine o'clock we returned to ſup and ſleep at M. Brunius's: his houſe was the beſt retreat we met with; it was placed nearly in the middle of the ſpace compriſed by our triangles, and very near the northern extremity of our baſe: we always found there three rooms, that we could occupy without inconvenience to the family, which was very numerous. They furniſhed us abundantly with every thing neceſſary for our ſuſtenance, and every one there exerted himſelf to ſerve us. The good father, old and blind; the mother of the ſame age; their ſon and ſon-in-law, with their family and ſervants, formed a very natural repreſentation of a houſe of the ancient patriarchs. Hoſpitality is exerciſed pretty generally throughout the country: if want of reſt, or dread of bad weather, at any time induced us to take refuge in a houſe, the maſter, before we could ſay any thing to him, ſometimes even without an interpreter to make ourſelves underſtood, immediately opened for us an apartment, apparently deſtined for ſtrangers only, and remained ſtanding looking at us, his family aſſembled about him, and every one quickly haſtened to wait on us. If it were in the ſmalleſt degree cold, fire was immediately

 kindled;

kindled; and frequently they brought what little they had to eat before we aſked for it. As M. Helant, the only Finniſh interpreter we had, could not be every where, that we might not want for neceſſaries in his abſence, we learnt to ſalute in this language, and to aſk for milk, butter, bread, water, or to drink.

Thurſday morning, the twenty-third, not content with giving us an excellent breakfaſt, M. Brunius put ſeveral bottles of beer into our boats: we had five ready, and at ten o'clock we embarked to go to the ſouthern extremity of the baſe. M. Brunius went with us; he was going to lay in his ſtock of ſalmon: he told us, for many years there had not been ſo great a ſcarcity of water in the river, nor ſo much dry weather; in conſequence on every ſide there were fires in the foreſts. Peter returned then from Horrilakero, where he had employed twenty-two men in extinguiſhing the fire, and reeſtabliſhing the ſignal: he left ſeven to watch leſt it ſhould break out afreſh.

At three in the afternoon we reached the ſouthern ſignal of the baſe, at a moment when the clouds of ſmoke were tolerably diſperſed; but ſcarcely had we begun our obſervations, before the wind changing brought them back again. We were impatient to finiſh them, and to profit of the remaining time before the froſts ſet in, to go to Kittis, in the neighbourhood of Pello, in order to make the neceſſary obſervations with the ſextant, which had juſt arrived from England at Torneo. In the evening we went down to Niemiſby, which is a ſmall village: we pitched our four tents there in the meadow, where we paſſed the night. After liſtening to all the means propoſed for preventing the loſs of time, M. de Maupertuis thought it would be beſt for ſome one to go to Pello to prepare every thing neceſſary, in order that, on arriving there with the ſextant and other inſtruments, we might be enabled to begin immediately the neceſſary obſervations. M. Camus took theſe preparations upon himſelf, and for that purpoſe left us on Friday, the twenty-fourth, accompanied by M. Herbelot.

We returned to our ſouthern ſignal, where we happily terminated our obſervations: we then came back to Niemiſby, to embark in our four boats to go to Cuitaperi, to take the angle between the ſouthern ſignal of the baſe and mount Avaſaxa. Friday night and Saturday, the twenty-fifth, we made many fruitleſs attempts: we were unable to make our obſervations, the clouds of ſmoke which covered the country keeping us on this mountain, where our reſidence was extremely diſagreeable; in ſpite of cold, we had numbers of gnats. A little rain which fell in the night was not ſufficient to extinguiſh the fires; it had however beaten down and diſperſed the ſmoke; and we had clear weather ſufficiently long to make our obſervation, which was only of one angle, on Sunday morning the twenty-ſixth.

At two o'clock in the afternoon we came down the mountain; we found five boats at the banks of the river, M. Camus having ſent his back as ſoon as he had reached Ofwer Torneo, where he took another. I embarked in the ſame as M. de Maupertuis, and we kept in it going down the cataract of Matka. A little below this cataract, as we were threatened with a heavy rain, and it was late, we made for land at a good houſe of Korpikyla, on the weſtern ſide of the lake made by the river: the rain diſperſed, we pitched our tents, and paſſed the night there. M. Viguelius, chaplain and director of the ſchools of Torneo, was with us; he had that day preached at this houſe, which was called Tepane Piping: the inhabitants of the neighbourhood having been informed of it had aſſembled there. M. Viguelius told me that this was often the caſe at places diſtant from a church; and further, that when there was any one ill, he uſed to make the conſecration to them to adminiſter the communion. In the evening we ſaw between the clouds an aurora borealis.

Monday

Monday morning, the twenty-ſeventh, there was in the court a Lapland man and woman: they were two ill-made perſons, almoſt always ſitting on their heels, and came begging; they would not have been very ſhort had they ſtood up.

We left this place at ſeven o'clock in the morning. We landed on paſſing the cataracts of Kuckula: we amuſed ourſelves in noticing the movements of our boats from the banks, how at times they appeared in the air, and at others ingulphed by the waves. We ſaw there an ermine, which hid itſelf ſo cunningly among the ſtones, that we were unable to find it: we ſometimes ſaw them run into the water towards the banks of the river or lakes. We ſaw alſo birds of the eagle ſpecies dart into the waters of the cataract, and carry away fiſh in their claws: we were told that when theſe birds dart upon fiſh of too conſiderable a ſize for them to bear away, they are ſometimes drawn beneath the water by them and drowned, not being able to withdraw their claws. At three in the afternoon we arrived at M. Pipings', where we firſt landed on our arriving at Torneo; we found there again the ſame rooms and beds. It was the firſt time from the ſixth of July that we laid between ſheets.

From the mountains of Nieva, Kukuma, and Cuitaperi, we diſtinguiſhed the belfry of Torneo, and from this belfry we had to take the angles between thoſe three mountains: the two firſt were eaſily diſtinguiſhed; but neither on Monday, nor at any time on Tueſday, the twenty-eighth, could we perceive the third. At length, on Wedneſday morning, the twenty-ninth, we perceived from the belfry of the town mount Cuitaperi, and we aſcended with our quadrant to make our obſervations: the weather did not allow of our taking them to our ſatisfaction. During the night it rained a great deal, and ſtill more on Thurſday morning, the thirtieth. The rain began again in the evening, laſted all the night, and the whole of Friday, the thirty-firſt.

After wandering about ſo long among the lakes and mountains, Torneo appeared to us another world. Lieutenant-colonel Dariez came to ſee us, and invited us to dine with him; we all of us went on Friday: Meſſrs. de Cederſtrom and Meldecreutz were of the party. The next day theſe gentlemen accompanied us to the belfry, where we ſtaid all day waiting in vain for an opportunity to obſerve our angles. We then regretted the tranquillity of the mountains: we were ſurrounded by ſpectators, who incommoded us, and were no ways intereſted in our obſervations.

Sunday, the ſecond of September, there was clear weather very fit for our taking the angles; we thought of nothing elſe. In order to get rid of troubleſome company, and to make our obſervations at eaſe, M. Celſius, who went to church, as ſoon as it was over, went up the belfry and ſhut himſelf in. M. de Maupertuis and myſelf pretended to take a walk, and when by ourſelves we aſcended to the tower of the belfry, where M. Celſius, as we had concerted, was waiting for us, and where we had ſhut up our quadrant ſome days before. Before evening ſervice we had ſufficient time to complete our obſervations.

We had now no more than one angle to take to perfect our trigonometrical ſeries; it was at Kukuma, to take the angle of Horrilakero and Niemi, in order to cloſe the heptagon which the ſituation of places had allowed us to form, and which afforded us ſingular advantages for proving the ſeries of our triangles.

During the too long ſtay we had made at Torneo, we had got ready every thing we had to take to Pello for making the different obſervations. For the ſextant alone three boats were required: we had beſides, three pendulums vibrating ſeconds, ſeveral ſimple pendulums, quadrants, barometers, thermometers, and a variety of other inſtruments to take with us. M. de Maupertuis had obtained an order for the lanſeman of Ofwer Torneo to furniſh us with fifteen boats: the ſoldiers and countrymen were ſo anxious to ſerve us, that

that inſtead of fifteen, there were eighteen or nineteen. There was a long diſpute among theſe Fins; they would all go, and ſeized on the different packages to load their boats with; but the lanſeman had ſent a liſt of fifteen which he had engaged, and in theſe we all ſet off on Monday, the third, a little after noon. We only left two ſervants at M. Piping's at Torneo, with M. Herbelot, who was juſt returned from Pello. Along the cataracts we walked, and again ſaw birds taking fiſh. It rained a little, and as it increaſed after paſſing the cataract of Kuckula, we landed on the iſland Toiwolan, otherwiſe Kukulan; there were ſome houſes there, wherein we ſpent the night.

Tueſday, the fourth, about ſix in the morning, we departed, and arrived with our little fleet at Corpikyla at ten o'clock. After dining here all together, while the reſt of the party continued their road to Pello, M. de Maupertuis, M. Celſius, and myſelf, ſet out towards Kukuma; the rein-deer which followed us on the nineteenth of Auguſt reſolved again to be of the party, and would not leave us. At two o'clock in the afternoon one of our ſailors or ſoldiers perceived we were gone wrong, and one of them returned to Corpikyla to obtain a guide. We were then obliged to wait for him in a heavy rain; and after our guide had arrived we were able to proceed but very ſlowly, our Fins being very heavily laden.

We arrived on the top of Kukuma a little after eight o'clock; it was already very dark, and the rain came on heavier; the whole ſummit of the mountain was nothing but rock or water: nevertheleſs we pitched a tent in a ſpot as damp as it was hard, and Peter, who was with us, pitched the other near the ſignal, to put the quadrant under ſhelter. Our Fins, well ſkilled in making fires, kindled one in ſpite of the badneſs of the weather; we endeavoured to warm and dry ourſelves, but the cold rain, which fell in torrents, rendered our attempts uſeleſs. M. de Maupertuis, tired of being cold, and getting wet by the fire, retired towards the tent: the night was very dark, it was one of thoſe not lightened by the aurora borealis. M. de Maupertuis walking on the points of the rocks, on which by day it is difficult to walk, put his leg between two rocks and fell. Peter and myſelf ran to him on hearing the noiſe, and found him in ſuch a ſituation as to give us apprehenſion he had broke his thigh: we helped him into the tent, and we cut twigs of birch to ſerve as a mattraſs for him. I ſupped by the fire with M. Celſius; we went to lay down in the tent beſide M. de Maupertuis, and paſſed the night coolly enough.

It rained again on Wedneſday, the fifth, all the morning, with a fog: in the afternoon we endeavoured to take our angle, but could not ſatisfy ourſelves; we were however comforted by learning that M. de Maupertuis found himſelf better, and that he had nothing to fear from his accident. It rained very much through all the night again: our poor Fins bore with all the conſtancy imaginable the brunt of the weather, without any ſhelter; they appeared as inſenſible to its roughneſs as our rein-deer.

Thurſday, the ſixth, by ten in the morning, it ceaſed to rain; we made our obſervation very well, dined, and left the mountain at three in the afternoon, to go by very bad roads, and often through water, to ſleep at Corpikyla. M. de Maupertuis walked very well, and felt ſcarcely any pain: our rein-deer came back with us, and rejoined the others feeding by the hut of the Laplanders.

Friday morning, the ſeventh, one of the Lapland women, very infirm, came, drawn by a rein-deer, to M. de Maupertuis, to bring him a baſket which ſhe had made, and which ſhe ſold to him. At ſix o'clock we ſet off in five boats; we aſcended all the cataracts on foot as far as Cainunkila. While waiting there for our boats we ſaw them threſh their barley: they put it firſt in a room to dry, in the corner of which is a kind of ſtove: it is a large ſquare block of ſtone, rather longer than wide, through the middle

of

of which a cavity is cut which runs its whole length. They kindle a fire in this hollow, as we do in our ovens, and this cauſes an amazing heat, which continues for a great length of time in the block of ſtone. It is in this room that they finiſh the drying of the barley, which beforehand after the harveſt has been expoſed to the rays of the ſun on large ladders, which are erected for this purpoſe near to every houſe: there are even ſome in the middle of the town of Torneo. They threſh their grain, thus dried, with flails, ſufficiently reſembling thoſe which the country people make uſe of in France; and after clearing the grain, by throwing it from one ſide of the barn to the other to ſeparate the duſt, they complete the operation of cleaning in rather deep baſkets, which ſerve them for fans.

I ought to have obſerved before, that they reap their rye and barley with a ſickle, as is the practice in France: not ſo with the hay; they uſe a ſcythe, the blade of which, almoſt as long as ours, is much more narrow; it is faſtened to a handle which is no more than two feet four inches long, or at moſt two feet and a half: they dart this ſcythe among the graſs, firſt to the right, and then to the left, with ſuch quickneſs, and ſtooping ſo low, that it is wonderful how they are able to ſupport the fatigue.

We began to ſee ſome horſes, which were returning from their ſummer quarters. The manner of living of theſe animals is among the moſt ſurpriſing things of this country: it is only in the winter that they are made uſe of in dragging ſledges, which ſerve for travelling in, as well as to carry the different neceſſaries of life, particularly wood and fodder; for during the ſummer all travelling and carriage of every thing is effected by water.

During the month of May, earlier or later according to the length of winter, the horſes leave their maſters on the firſt thawing of the ſnow, and go into certain quarters of the foreſts, where they ſeem to have eſtabliſhed among themſelves a rendezvous. Theſe horſes form ſeparate troops, which never interfere or ſeparate from each other: each troop takes a different quarter of the foreſt for its paſturage, and keeps to that which is fixed upon without encroaching on the others. When their food is exhauſted they decamp, and go in the ſame order to occupy another paſture.

The police of their ſociety is well regulated, and their march ſo uniform, that their maſters always know where to find them, if by chance they ſhould want in the ſpring or ſummer to travel any where in a carriage or ſledge, which ſometimes happens to be the caſe; or if any traveller ſhould want horſes. In that caſe the countrymen, receiving the orders of the gifwergole, that is to ſay, the poſtmaſter, go into the woods to fetch their horſes, which after rendering the ſervices required, return to the foreſt of themſelves, and join their companions again. When the ſeaſon becomes bad, which it began to do in the month of September, the horſes quit their foreſt in troops, and every one proceeds to his own ſtable: they are ſmall, but excellent, and lively without vice: their maſters lay hold of them ſometimes by the tail to catch them, and they ſeldom make reſiſtance. There are however ſome, in ſpite of their general docility, who defend themſelves on taking them, or attempting to harneſs them to carriages. They are very healthy and fat when they return from the foreſt; but their almoſt continual labour during the winter, and the little food given them, makes them loſe their good appearance very ſoon. When faſtened to the ſledges, they frequently as they run ſeize on mouthfuls of ſnow; and as ſoon as releaſed they roll amid the ſnow, as ours are wont to do in the graſs: they paſs the night as frequently in the yard as the ſtable, even in the ſharpeſt froſts: they frequently are in want of food, particularly when the winter is very long; the horſes then go and forage for themſelves in places where the ſnow has begun to thaw.

Not ſo with the cows; in the villages along the rivers they go to no diſtance from the houſes to which they are daily taken to be milked. At Torneo, in the ſummer, there are few cows brought to the town: during rainy years, when the iſthmus of Nara is overflowed by the river, they can only reach it by ſwimming; on this account many of the burghers have ſheds on the weſtern banks of the river, ſouth of Mattila, to which their wives and maids go by water to milk them; they are ſmall, almoſt all white, and many without horns.

By then our boats had got up the cataract Waojenna, it was ten o'clock in the morning: we re-embarked, and took ſhelter from a very heavy rain at two o'clock at Alkula. We arrived at night at M. Brunius's, where as uſual we were received in the moſt gracious manner.

Saturday morning, the eighth, after taking tea, which is much the practice in the better houſes of the country, and eating our breakfaſt, we ſet off for Pello with only four boats: the conductor of the fifth could not accompany us; he was a corporal, and had received order to be at a certain place to attend the exerciſe of the ſoldiers. At eight o'clock at night we arrived at Turtula, that is to ſay, to the houſe of Martila, where we always took up our abode. We left it on Sunday, the ninth, at ſeven o'clock, and proceeded to dine on the rock of Pello Pyta: there was a fog, and very cold north wind; we made a good fire, for wood in this country is nowiſe ſcarce.

At length, at three o'clock, we arrived at Pello, where we all met together, except M. Herbelot, who was employed at Torneo on ſome drawings he had to finiſh. M. Camus had been a fortnight at Pello; he had been alone before joined by Meſſrs. Clairaut and Monnier, who accompanied the ſextant with all the inſtruments. M. Camus in that time had got ready for us two apartments in the houſe of Corten Niemi, one of which was intended for obſervations on the ſimple pendulum, and to fix a teleſcope in, to regulate them by the motion of the fixed ſtars. M. Camus, for that purpoſe, had cauſed the floor of the apartment to be cut, in order to erect a ſhaft of ſtone on which to fix the teleſcope, and hang the ſimple pendulums: there remained therefore no more than one room for ſleeping at Corten Niemi. He had provided two others in the houſe of Purainen, about one hundred and fifty toiſes from the other: one of theſe apartments was occupied by Meſſrs. Clairaut, Le Monnier, and Celſius; the other by M. de Maupertuis and myſelf.

In the houſe of Saukola we ſhould have been much nearer to Mount Kittis; but it belonged to a poor man who had not a ſingle room fit for us. M. Camus bought of him his cotta, that is, a ſort of pavilion higher than the other parts of the houſe, and larger at the top than the bottom: at the top there is uſually a long pole with a weather-cock. In this cotta it is that ſnow is melted and water warmed to give to the cattle during the winter: ſome make their brandy in it from grain. M. Camus bought this cotta then, and had it taken to pieces, and afterwards carried and put together again on the mountain, where it ſerved as an obſervatory to place the ſextant in, and to take the diſtances of ſome ſtars from the zenith. We had the convenience of a forge at Corten Niemi; although not in very good condition, it was uſeful to us; we even forged ſeveral pieces of iron work for which we had occaſion.

Monday morning, the tenth, we employed a great number of workmen, the horſes were returned to their homes: thoſe of our two hoſts were uſed in drawing upon ſledges the caſes which contained the parts of our ſextant: a ſmall obſervatory was begun, quite new, preciſely over the point of the laſt of our triangles, to take there the direction of the meridian, and to fix a pendulum. The following days theſe different works were continued: every one worked at the part aſſigned him; all was in motion

at Corten Niemi, and on the mountain: the ſhaft of ſtone was finiſhed, and ſecured with clamps; the fixed teleſcope was ſet up, and an excellent pendulum of Julien Le Roi was in its place, on Thurſday night, the thirteenth. The two laſt nights there had been an abundance of rain; this was remarkable, for a very beautiful aurora borealis, whoſe ſtreams of light formed at times a vault, guſhing upwards from every ſide, and joining at the zenith: inceſſantly they changed their ſhape; in every quarter freſh ones were thrown out, leſs however in the north than in the other diviſions of the ſky.

Friday, the fourteenth, was one of thoſe grand prayer-days, of which the King of Sweden obliges the inhabitants to keep four in the year: on them they do no manner of work; they are obliged to ſend one from every family to church, though it ſhould be thirty miles diſtant, that is to ſay, ſixty leagues. Five families, however, in the village of Pello are exempted, for fear of accidents happening from fire, or any other cauſe; and each inhabitant in his turn ſucceeds to the exemption. At church the names of thoſe who attend are regiſtered, and there are penalties for ſuch families as are abſent without ſatisfactory reaſon: on theſe days they remain very long at church. At Ofwer Torneo there were two ſucceſſive ſermons, and the people were in church from nine or ten in the morning until three in the afternoon.

Saturday, the fifteenth, a man coming from Wardhus, M. Celſius had a long converſation with him: if we had had nothing elſe to do than to ſatisfy our curioſity, he would have created in us a deſire to viſit a country ſtill colder and more deſart than that which we were in. There came ſome Laplanders, moſt frightful figures, to aſk charity of us, crying all the time: they came in without tapping at the door, entering our apartment without ceremony; and whatever they ſaid, we could only comprehend the word Jeſou Chriſtou, which they repeated pretty often. Some girls of the village who were betrothed came with their mothers, to beg a few pieces of money towards celebrating their nuptials. As we paid our workmen well, in ſo poor a country, it cauſed a high opinion of our opulence. M. Camus had provided a caſe of drugs and medicines for our voyage; this made him eſteemed throughout the country ſome famous phyſician. A girl who had fallen ill at Torneo, ſent an expreſs to Pello to conſult him on her complaint, and to requeſt the proper remedies: he anſwered with ſo much gravity, that ſhe certainly would be cured if all that were wanted in the cure were to ſtrike the imagination. Theſe little adventures added to the gaiety which we conſtantly enjoyed in midſt of our operations.

The ſky was cloudy, and we had not hitherto been able to obſerve by our fixed teleſcope the paſſage of a ſtar: nevertheleſs the obſervatories were ready on Kittis. Sunday afternoon, the ſixteenth, we placed the ſextant in the grand obſervatory; the weather continued heavy with a little rain the reſt of the day, and all Monday, the ſeventeenth, and Tueſday morning, the eighteenth.

Tueſday afternoon it began to be fine, and Meſſrs. de Maupertuis, Clairaut, Sommereux, and myſelf, went to take a walk; at night the ſky being clear, we obſerved the paſſage of the bright part of the Eagle over the threads of the fixed teleſcope, which was faſtened to the ſtone ſhaft. We had fixed another teleſcope againſt the planks of wood, which ſerved as a wall to the apartment; but we very ſoon perceived that the wood gave, and that no reliance could be placed on the obſervations made with this teleſcope.

During the night there were auroræ boreales, and it froze. Wedneſday, the nineteenth, the weather changed, the wind got round to the ſouth, it was miſty, with an appearance of ſnow. It rained very hard during the night, ſo that no opportunity offered of obſerving an eclipſe of the moon: we only began at a quarter paſt four on

Thurſday morning, the twentieth, to ſee the moon, which was then entirely eclipſed; it was very feebly diſtinguiſhed, perhaps owing to the twilight; at a quarter paſt five it had not begun to paſs the ſhadow of the earth, and ſinking below the horizon, it was again concealed by clouds.

We continued to work at what related to the obſervations which we had to make: we went to place in the little obſervatory on the mountain a pendulum which Mr. Graham had ſent, with the ſextant. In the ſame obſervatory an inſtrument was placed for taking the direction of the meridian. From the time of the ſextant being put up, ſome one of us had ſlept every night in the great obſervatory, in order that the inſtruments might not be deranged or ſpoilt.

The inhabitants began to bathe frequently: their bath is ſo hot that M. de Maupertuis, who wiſhed to try it, found that the thermometer of Reaumur roſe to 44° above the freezing point. In their baths they have a kind of ſtove, exactly reſembling that which I deſcribed as in uſe among them for drying their corn; it is as well placed in the corner of the chamber. When the block of ſtone which forms it becomes well heated, they throw water upon it, and the ſteam from this water makes their bath: they generally go in two together, each holding a handful of twigs, with which they whip each other to excite perſpiration. I have ſeen very old men at Pello go out of a bath quite naked, and violently ſweating, and paſs acroſs a court through the froſty air, without receiving any injury from it. At Corten Niemi, and in the houſe of every farmer at all of eaſy circumſtances, beſides the room deſigned for the bath, they have another larger, wherein there is a ſtove: two or three little ſquare holes, of ſix inches wide, ſerve for windows; here the family ſleep during the winter. In the day-time the men work at mending their nets for the fiſhery, or making new ones; the women ſew, or weave cloth: they are, as it were, in a hot-houſe in theſe rooms, which are called Porti, or Pyrti. Small ſlips of deal, exceeding thin, two or three feet long, which they light, ſerve them inſtead of lamp or candle: theſe ſlips of wood, which are very dry, burn well, but do not laſt long; the wick which falls off on its being conſumed, is received into diſhes of ſnow, to prevent danger from fire.

Thurſday night we were yet troubled with ſome of thoſe vexatious ſmall flies. At night the ſky overcaſt; and Friday morning, the twenty-firſt, a quantity of ſnow fell until ten o'clock; afterwards the weather became ſerene: we took advantage of it to aſcend the mountain, in order to obſerve the direction of the meridian, and to fix the ſextant in that direction. All night long the weather was ſerene; there was not however any aurora borealis; the wind north, with a froſt. The fine weather continued all day, Saturday, the twenty-ſecond; we paſſed it on the mountain taking correſponding heights of the ſun, to regulate the pendulum, and deſcribing a meridian with a ſtretched thread in the great obſervatory, to prove the poſition of the ſextant in the line of the meridian.

We had placed in the ſmall obſervatory an inſtrument, for the purpoſe of having the direction of the meridian with reſpect to the triangles; it was placed exactly at the point of the laſt triangle. The teleſcope of this inſtrument being pointed to the ſun at noon, or to a ſtar on its paſſing the meridian, was lowered vertically, and gave on the horizon a point, between which and Pullingi and Niemi we obſerved the angles. We repeated this obſervation ſeveral times during our ſtay at Pello. The fine weather continued all night; there were auroræ boreales, and it froze harder than on the preceding night.

Sunday, the twenty-third, notwithſtanding the north wind, and the cold continued, it was very cloudy. Monday morning, the twenty-fourth, the north wind increaſed; a large

large quantity of ſnow fell, which however began to thaw before night. The bad weather continued throughout Tueſday, the twenty-fifth: at times it ſnowed, at others it rained; all our attention was occupied in preventing the penetration of the ſnow, which the wind drifted through the ſmalleſt crevice, from being of any injury to the inſtruments upon the mountain.

When we left Torneo we did not expect to meet with ſuch bad weather; and as there was not any great likelihood of its changing, M. de Maupertuis ſent two ſervants to Torneo for proviſions, that is to ſay, for flour and brandy, with bed-clothes and reindeers' ſkins, which the ſeverity of the cold began to render neceſſary. We occupied ourſelves variouſly during the bad weather; we got up barometers and proved them, as well as the thermometers, and made places for our obſervations on gravity, with the different ſimple pendulums which we had brought from Paris.

There was ſome appearance of fine weather during the night, and the next day, Wedneſday, the twenty-ſixth. We were always anxiouſly looking for fine weather, in order to profit by it immediately: for this purpoſe Meſſrs. de Maupertuis and Celſius paſſed the night on the mountain; M. Le Monnier the following night; but we had conſtantly cloudy weather, although it was ice-cold, and were unable to make any obſervation with the ſextant, or take the paſſage of the bright part of the Eagle by the fixed teleſcope, to make uſe of in our experiments on the ſimple pendulums.

The weather, ſo continually adverſe, gave us much uneaſineſs. We had choſen δ of the Dragon as the moſt proper ſtar for the obſervation of the ſextant: it paſſed the meridian near enough to the zenith, at the moſt ſuitable hour, to be again obſerved at Torneo; but we were under continual apprehenſion of not finiſhing our obſervations at Kittis ſufficiently in time: in the interval, we were approaching the period when we ſhould be ſtopped, not only by our obſervations, but alſo by the ice in the river, which in the beginning of winter, and frequently for a long time ſerves as an impediment to all navigation, but is not ſufficiently ſtrong to bear ſledges. This difficulty became ſo much the more ſerious for us, from our having to tranſport thither the ſextant, the foot of which alone was extremely heavy.

Had the weather been tolerably favourable, and left us without inquietude about the ſucceſs of our operations, our reſidence at Pello would have been pleaſant enough. We formed a ſociety very much attached to each other, had comfortable apartments, conſidering the country, and had on the banks of the river walks as pleaſant as they were recluſe: beer, brandy, and water from the river, ſupplied the place of wine; and if ſome things were wanting, we had a ſuperfluity of others. To-day two dozen of fat moor-game were brought us, which coſt us no more than two ſous each, which was however much more than what the inhabitants of the country were wont to pay; we frequently alſo had woodcocks and hares. M. Brunius came to ſee us; and ſome days after, M. Antilius, chaplain of Kengis, who had been preceptor to M. Helant, our interpreter; he ſtaid two days with us at Pello: he ſhewed us his Lapland almanac; it was a piece of wood, two feet long, with different characters engraved on its four faces; it was ornamented at top by a little plate of ſilver, and at bottom with a very long iron ferrel, badly made: he gave to M. Camus a loadſtone, armed, but very weak: he brought us in his boat from Kengis beer, poultry, and barley-bread ſpiced. M. de Maupertuis preſented him with ſeveral bottles of excellent French brandy. We had the comfort of receiving news from France almoſt every week, for the poſt arrives weekly at Torneo; and although we were thirty leagues diſtant, our letters were quickly delivered.

Holy Thurſday, the twenty-ſeventh, at night, the barometer got up a line; the ſky always covered with the ſame north wind, but leſs cold during the day, ſo that the ſnow was nearly all melted. It froze again during the night; and at length on Saturday, the twenty-ninth, we had clear weather.

We paſſed all the morning on the mountain, verifying the poſition of the ſextant in the line of the meridian, and regulating the pendulum of Mr. Graham by correſponding heights, in the little obſervatory where it was placed.

I began in the apartment where the ſtone ſhaft was, to obſerve the vibrations of a ſimple pendulum: it was a bar of well-poliſhed iron, ſomewhat thicker below than at the top, where it was open, and ſuſpended on a pivot of ſteel, made like a knife. I compared the vibrations of this ſimple pendulum with the vibrations of an excellent ſecond pendulum of M. Julien Le Roi, placed in the ſame apartment, and which was regulated by the fixed ſtars.

At night we obſerved the paſſing of the bright part of the Eagle by the fixed teleſcope; but we were not yet able to make any obſervation with the ſextant; we only fitted it more exactly in the line of the meridian. It was very cold in the night. Sunday morning, the thirtieth, the thermometer was eight degrees below the freezing point, and the edges of the river were frozen the thickneſs of ten lines. It was very fine all day; but at night cloudy with ſnow, which continued on Monday, the firſt of October. I had gone on with my obſervations on the ſimple pendulum: on Monday M. de Maupertuis came to continue them with me, and went to the mountain in the evening, where he remained all night with Meſſrs. Monnier and Celſius: they paſſed all Tueſday, the ſecond, there as well, which was a tolerably fine day, and at length began to take obſervations with the ſextant. It had not thawed throughout the day, notwithſtanding the ſun was out for ſome time, ſtill we did not much feel the cold. The following night it was ſo extreme, that the river was frozen almoſt to the middle by Wedneſday morning, the third; at the edges the ice was from fourteen to fifteen lines thick. Scarcely a night paſſed without auroræ boreales. Game and birds became every day more plentiful: we ſaw large flocks of ducks on the river; and frequently heard the cry of cranes and ſtorks as they flew over us.

M. de Maupertuis came in the morning from the mountain to the apartment of the ſtone ſhaft, where I was, continuing experiments on the ſimple pendulums during the time of the ſtay of the others of our party on the mountain, occupied with their obſervations. M. de Maupertuis divided his attention between one and the other. This evening he received a letter from M. de Maurepas, which he communicated to us; it was highly complimentary in what regarded us.

The weather was ſtill cold, and although cloudy, it never failed to freeze at night. Thurſday, the fourth, it was more mild, and very fine, and at night we made our obſervations as well as we could deſire: M. de Maupertuis, M. Camus, and myſelf, that on the bright part of the Eagle with the fixed teleſcope; and Meſſrs. Clairaut, Le Monnier, and Celſius, that on the ſtar δ of the Dragon, with the ſextant. The two following days, the fifth and ſixth, it continued fine, and we again made the ſame obſervations. At the ſextant we always obſerved three together, and not every day the three ſame perſons: one counted the pendulum, and another attended to the micrometer, while the perſon obſerving through the teleſcope moved it backward or forward by the micrometer without looking to it, before he ſaw the ſtar cut by the thread of the teleſcope, and paſs through its whole ſcope.

Sunday, the ſeventh, the weather continued fine; but unfortunately during the obſervation a motion was communicated to the ſextant, which made us ſuſpicious of error.

Monday,

Monday, the eighth, ſtill fine weather; the obſervation at night was perfectly made: the cold increaſed, and the ice in the river, which had thawed, appeared again. Tueſday, the ninth, was cloudy. Wedneſday, the tenth, fine, and our obſervations were very well made; but time now no longer allowed of more, and M. de Maupertuis was perfectly ſatisfied with them already made. All thoſe by the ſextant gave the ſame diſtance of the ſtar δ of the Dragon from the zenith, within two or three ſeconds. The different obſervations on the ſimple pendulums had alſo been made with all poſſible care, but did not give the ſame reſult to equal nicety. Two of theſe pendulums were bars of iron well poliſhed; one cylindrical turned; the other lozenge-ſhaped with four ſides: three others of theſe pendulums were made with a ball of braſs, filled with lead, ſtrongly ſoldered to a rod of ſteel, at the end of which it was ſuſpended upon two knives.

Wedneſday night, when I returned to Corten Niemi to Purainefe, I found M. de Maupertuis come back from the mountain, who acquainted me with the reſult of the obſervations on the ſimple pendulums, and told me he was deſirous that at leaſt one of the ball pendulums, inſtead of being ſuſpended on two knives, ſhould be hung on a ring, or rather a ſimple ſhaft fixed at the extremity of the rod of the pendulum: this, on the next day, I effected; in returning from one ſide to the other, its motion was more uniform than it had been when hung on two knives. I took away the ball from another of theſe pendulums, and ſubſtituted a lentil, in order to determine whether the reſiſtance of the air being leſs, there would not be a difference in the movements of the pendulum; there did not appear to be any.

Thurſday, the eleventh, the weather had become very mild; but there was a thick fog, which ended in rain; and afterwards there was nothing but a ſucceſſion of fog and rain: if at any time ſome ſhort intervals of clear weather occurred, they never happened at ſuch hours as were ſeaſonable for our obſervations. Any man, except M. de Maupertuis, would have been ſatisfied with thoſe we had already made, as well with the ſextant as the ſimple pendulum; he however wiſhed to wait for a return of fine weather, to repeat them. We had now reached the twentieth of October, without any appearance of it; the barometers roſe ſeveral lines, and notwithſtanding we had continually either fogs, rain, or ſnow, which melted as it fell. In caſe the weather ſhould become clear, the ſeaſon being far advanced, we ran great riſk of being detained at Pello at leaſt for a month: there would have been a froſt ſufficiently ſharp to freeze the river; and as long as this remained without becoming much more ſevere, the ice would have prevented the navigation of the river, without being ſufficiently hard to bear ſledges. Beſides, it was deſirable to ſuffer as ſhort an interval as poſſible to elapſe between the obſervations made at Pello and thoſe to be made at Torneo.

All Saturday, and Sunday, the twenty-firſt, was paſſed in deliberating on what ſhould be done; and at laſt, the bad weather ſtill continuing, we determined on going. Monday morning, the twenty-ſecond, we went up the mountain and took down the ſextant and all the inſtruments, which kept us employed till five in the evening, when we returned to Corten Niemi.

Tueſday morning, the twenty-third, the ſextant, part of the ſimple pendulums, the pendulum of M. Le Roi, and almoſt all the inſtruments, were put on board five boats; Meſſrs. Camus and Celſius embarked at the ſame time, to fall down to Torneo, and prepare there a proper place to fix the ſextant in, and to make obſervations upon it. On arriving at Ofwer Torneo they took freſh boats, and ſent back the five they took from Pello: Meſſrs. Clairaut and Le Monnier ſet off the next day in the afternoon with three of theſe boats. We ſhould have departed together, but the preſence of all of us at Torneo was not indiſpenſable during the preparation of a place for, and fixing the

ſextant; and M. de Maupertuis was yet deſirous of making, for two days longer, ſome experiments on the ſimple pendulums. We continued therefore thoſe which we had before begun; but as the weather was ſtill bad, and we could make no obſervations with the fixed teleſcope, to aſcertain the motion of the pendulum of Mr. Graham, which we had reſerved: M. de Maupertuis, fearful of being detained too long a time, if the river ſhould happen to be frozen, reſolved on our departure the next day. He wiſhed to make experiments of gravity without interruption by the pendulum of Mr. Graham, which for ſome days back we had placed in the apartment of the ſtone ſhaft: we therefore left it at Pello, with the other ſimple pendulums which had not been tried, deſigning to come back in a ſledge during the winter, when we were given to underſtand we might expect a very ſerene ſky.

Friday, the twenty-ſixth, Meſſrs. de Maupertuis, Sommereux, Helant, and myſelf, embarked for Torneo: we dined at Hyougſing, in the houſe where we had been ſo well received the thirtieth of July, and by night reached the houſe of M. Brunius. The ſailors which brought us from Pello knew the danger to which they were expoſed, by being at any great diſtance from home at ſuch a ſeaſon: they were apprehenſive, if the froſt began, of being ſtopped by the ice on the river on their return; on which account they beſought us to take others for the continuation of our voyage. We took four at Ofwer Torneo, and departed early on Saturday morning, the twenty-ſeventh. We dined at Coifwunkyla, at a friendly farmer's, whoſe nephew, then in the houſe with him, ſpoke Latin. M. de Maupertuis made him dine with us; and we were looked upon with great curioſity by all the family.

We did not land to go down the cataract Waojenna, which was frightful, as much from the contrary wind, as the great abundance of water; for many years the river had not been ſo much ſwollen at that ſeaſon. The cataract Macka was ſo ſtrong and impetuous, that not only did we land, but the ſailors themſelves were obliged to unload their boats, to carry their loading along the bank of the river, for the ſpace of from one hundred to one hundred and fifty toiſes, and afterwards to pull their boats aſhore, and drag them the ſame diſtance, to launch them again into the water below the cataract: there they loaded them afreſh, and we embarked. We reckoned upon ſleeping at Tohiwolan Sari, where we had before ſlept on the third of September; but at five o'clock getting dark, and the bad weather continuing, we landed at the houſe of Frankila, belonging to a very hoſpitable farmer, where we fared pretty well: we ſlept there, as uſual, ſome on benches, ſome on tables, and others on the floor.

Sunday morning, the twenty-eighth, the ſky became ſerene, and our watermen, fearful of cold and ice, ſet off with us a long time before day-light: they would not allow us to remain in the boats at the cataract of Kukula, below which we again went on board. We ſaw a number of ſwans on the banks of the river. We paſſed over the iſthmus of Nara in our boats, where the waters of the river formed a little cataract, entirely ſurrounding with water the town of Torneo.

M. Piping, the burgomaſter, could ſpare us no more than four apartments, one of which was required for our ſervants: we were very well able to bear with being a little ſtraitened for room, where we paſſed a few days only at his houſe; but now having to paſs the winter at Torneo, we ſought to lodge more comfortably. Inſtead therefore of landing at M. Piping's, at his houſe of Nara, at the village of Mattila, we advanced farther with our boats, and landed pretty nigh the town-houſe, and proceeded to the houſe of a citizen, who had provided for us a dining-parlour and two bed-rooms, which Meſſrs. Le Monnier and Celſius choſe for themſelves: Meſſrs. Camus and Herbelot lodged in the ſame ſtreet, with a M. Planſtron: M. Clairaut lodged at M. Creuger's; and M. de

Maupertuis with a M. Piping, a relation of the burgomaſter. M. Helant went to his father's, at the ſouthern extremity of the town. There were then only M. Sommereux and myſelf unaccommodated. M. de Maupertuis found a ſpare room at the houſe of his hoſt for M. Sommereux, with whom he had frequent buſineſs, as he ſtood in the double capacity of ſecretary and treaſurer. M. Herbelot, who had ſtopped at Torneo, and knew the town, took me to Mad. Tornbery's, mother-in-law of M. Rokman, the ſurgeon: I there found an apartment which was very quickly put in order, and where I lodged during the whole of my reſidence at Torneo. All the others were in the ſame ſtreet, along the margin of the water; I alone was in the ſecond ſtreet, but directly oppoſite to M. de Maupertuis' lodgings, a back door of which led into my ſtreet.

Torneo is a little town, of about ſeventy houſes, which are all built of wood: there are three parallel ſtreets, extending from north to ſouth, a little towards the turning at the bank of a branch of the river, which is nothing but a bay during the ſummer, when the town is not entirely ſurrounded by water; theſe three principal ſtreets are croſſed by fourteen lanes. The church, which alſo is of wood, is ſomewhat ſeparated from the houſes, although within the paliſades which ſurround the town, and which as well incloſes a ſpace of ground which is cultivated, of rather conſiderable extent.

In this church the prayers are read in the Swediſh language, on account of the burghers, who ſpeak that language. The town and this church are ſituated in an iſland or peninſula, called Swentzlar. There is another church, built with ſtone, in another iſland, called Biorckholm, a quarter of a mile to the ſouth of the town: here the ſervice is read in the Finniſh language, for the benefit of the ſervants of the town and the peaſantry of the neighbourhood; very few of whom underſtand the Swediſh. The houſe of the rector is near the ſecond church, and he is unable to go to the city, except by a boat, or over the ice. In 1737, there were beſides three curates or chaplains, who aſſiſted the rector, and preached or read the ſervice ſometimes: they all dwelt to the weſt of the river, and came to town over the ice in winter, and in ſummer in boats, to avoid the greater length of road by Nara. One of theſe chaplains was director of the ſchools, and came every day to town; it was M. Viguiliers, of whom I have ſpoken, and who came very frequently to ſee us.

All the houſes in town as well as country have a large court, incloſed at leaſt on two ſides by apartments, and on the two others by ſtables and hay ſheds.

In the country theſe courts are perfectly ſquare; in town they are oblong. The ſleeping-rooms have the chimney in the corner, as was the caſe in all of ours: the chimney-places are no more than from two feet and a half to three feet wide, by four or four feet and a half high. Above the chimney-piece there is a very narrow horizontal ſlit, in which a plate of iron is inſerted, called Spihel, in order to ſhut the funnel of the chimney entirely, or in part, at will.

When they make a fire, the wood is placed upright in ſufficiently large quantity, and as ſoon as lighted it is ſpeedily reduced to charcoal; the ſpihel is then ſhut, and a degree of heat proportionate to their wiſh is communicated to the apartment. In my room I made the thermometer of Reaumur riſe to thirty-ſix degrees above the freezing point, at a time when the glaſſes of my windows were covered with ice. A candle placed in a candleſtick near the window became ſo ſoft, that it bent and fell.

In the country, the bed-rooms and the kitchen are made pretty nearly in the ſame manner as in town; the chimneys are made of brick and unhewn ſtones, which is the only maſon's work known in the country: frequently under the ſame chimney-flue, near the fire in the kitchen, they have an oven for baking bread; and ſometimes an alembic for diſtilling brandy from barley.

Beyond

Beyond Torneo, in going up the river, every countryman has a kind of pavilion, which they call Cotta, larger at top than at the bottom, and higher than the reſt of the houſe, at top of which, at the end of a long pole, is a weather-cock. Cloſe to the window of the cotta, without the houſe, there is a well; through the window the water is made to paſs into cauldrons, where it is heated, and where ſnow for the cattle is ſometimes thawed; occaſionally as well they make their brandy there. Moreover they have their granaries, which are ſeveral ſmall apartments ſeparate from the houſe, their baths, their rooms for drying and threſhing their barley, ſomewhat reſembling their baths; and beſides, their kitchen, and room called Pyrti, of which I have before ſpoken: ordinarily they have two very decent rooms for ſtrangers, to whom they always offer the beſt in every thing.

The burghers in town, no more than the country people, uſe above one blanket on their beds, a coverlid of white hare-ſkin ſerves inſtead of a ſecond. Many of theſe farmers have ſilver forks, large ſpoons, and goblets; with thoſe who are leſs rich they are of wood: they are kind, ſtudious of making themſelves ſerviceable, and perfectly honeſt.

I ſaid before that every farmer had his magazines; the greater part of thoſe of Torneo are along the ſide of the river. This magazine is a room built of wood, like the others, but raiſed from the ground; many even placed over the water, on four or ſix blocks of ſtone, to keep away rats: they get up to them by a wooden ladder, which is divided from the door by the ſpace of a foot. It is in this room that they incloſe a good part of their proviſion. Thoſe who are in eaſy circumſtances have ſeveral of theſe magazines.

They are forbid having many coats of the ſame colour: they are not allowed to wear any cloth coat which is not marked in the folds with the King's ſignet; any venturing to do ſo would have it ſeized. There are officers whoſe duty it is to go from houſe to houſe to ſee if the chimney-places are properly kept; if they have a lanthorn; in ſhort, if every thing be in proper order.

They are forbidden alſo, under a penalty of fifteen hundred dollars, being preſent at the maſs of the Catholics, to whom the laws of the kingdom only permit the exerciſe of their religion in cloſed apartments.

They ſeaſon all their meats with ſugar, ſaffron, ginger, lemon and orange-peel, and mix cummin in all their bread. The ordinary drink is beer, which they make very good: they have a little white wine at Torneo, which they call Vin de Picardon: all red wines they call Pontacte. Many country people know nothing of red wine: ſome of thoſe who followed us to the mountains, ſeeing us drink of it, imagined we were drinking the blood of the ſheep we had bought of them.

Along the river there are houſes from ſpace to ſpace, a certain number of which, although very widely diſperſed, make up a village. All thoſe from Torneo, to a ſpot beyond the cataract of Waojenna, belong to the pariſh of that town; and all north of the cataract to that of Ofwer Torneo, that is to ſay, Upper Torneo.

In this pariſh of Upper Torneo there are as well two churches: the chief at Sarki Luſhti, where the rector Brunius lives; the other at Hieta Niemi, where ſervice is ſometimes performed, for the convenience of thoſe pariſhioners at too great a diſtance from the principal church. Beſides theſe, there is a chapel at Kengis, with a chaplain, who does the duty of the rector. The villages the moſt apart are Turtula and Pello: at the firſt are only nine houſes; at Pello are ſeventeen, nine or ten of which are nearly contiguous to each other.

At Pello the ninth of September there was rye already up, very green and promiſing. They cultivate the land with ſhovels and ſpades alone, and know nothing of either ploughs or carts. The ſecond of October, as the earth was much frozen, they ſuffered their

their horſes to graze this fine rye. They ſow barley at the earlieſt in May, but generally in June, and it is ripe in the beginning of Auguſt, as well as the rye; they then reap it with a ſickle, the ſame as in France. All the barley is round-eared, and makes a very well-taſted bread. The inhabitants have near their houſes long poles, placed horizontally into holes made in two or three upright beams; the whole forms a kind of ladder, very wide, on which they expoſe their barley to the rays of the ſun, during the remainder of the month of Auguſt, while it yet appears for ſome time above the horizon: when the ſeaſon is adverſe, they take them into the rooms ſet apart for threſhing; they place them on large ladders, with the ears downwards, ſo that birds, not being able to perch on them, ſhould do them no damage.

Their harrows are contrived very ingeniouſly; they are compoſed of ſmall pieces of wood, which are faſtened together very much in the manner of certain chains made for watches: there are ſeveral ranges of theſe pieces, each range conſiſting of twelve; the firſt rank hung entirely upon two croſs pieces, to which the harneſs is faſtened, by which the horſe draws.

In all the country through which we paſſed ſcarcely any other trees were ſeen but fir and birch. In the iſlands of the Gulph of Bothnia there grows a tree reſembling the acacia; it bears bunches of white flowers, which turn to berries of a very lively red: there are a number of theſe trees in the church-yard of Torneo; no uſe is made of their fruit. A little to the ſouth of Torneo, in Weſt-bothnia, a tree is met with, of a middling ſize: ſome of them have leaves which reſemble thoſe of the pear-tree; others reſembling cherry leaves: this tree bears bunches of white flowers; it is called Eque.

At Torneo, and even beyond Uhma, there are no fruit trees; we did not find either black or white thorn, nor even bramble: ſtrawberries however grow even north of Torneo, with ſome currants, and wild roſes. North of Torneo no raſpberries are met with: they have yet however a good ſort of fruit which they call Ocrubeus; it is between a raſpberry and a ſtrawberry, and of a ſize between both; its leaf reſembles that of a raſpberry; its height is inconſiderable; its ſtem woody; it bears a red flower, which turns to a red fruit, pleaſing to the taſte. In ſome of the iſlands of the Gulph white-flowered ocrubeus are met with; they bear five or ſix white flowers on the ſame ſtalk, very much like the raſpberry; while the red-flowered ocrubeus has ſeldom more than one flower on each ſtalk.

They have alſo ſome other fruits: the hiouteron, a ſort of mulberry; its ſtem reſembles that of the ocrubeus, five or ſix inches high, and its fruit, on ripening, becomes yellow: it is found in marſhes and meadows. In dry places, in the woods, lingen is met with; it grows on a ſmall plant, whoſe leaves are like box; the ſtems, after creeping in nearly the ſame manner as verenica, for four or five inches, lift themſelves up, and bear at their extremities a bunch of very pretty bell-ſhaped flowers, of a purple colour, which in autumn produce red berries, a little ſour; the flavour like that of our barberry: this fruit, notwithſtanding its ſharpneſs, frequently incloſes a ſmall worm. The blober is another fruit of this country; it is a ſmall black berry, which is often met with in different places of Normandy, and in the mountains of Franche Compté. That of the north is of two kinds: one is at moſt but five or ſix inches high, the leaves of a bright green, and the fruit of a fine black; the other is above a foot high, and has the leaves and fruit ſomewhat of an aſh colour: both one and the other have leaves ſimilar to thoſe of the myrtle.

Beſides fir and birch, there are ſome ſallows, and here and there aſpins, very high and ſtraight.

In the meadows is ſeen a kind of narciſſus, very pretty; the leaf is thick, and like that of clover; it is called Sceptrum Carolinum, and known to the French botaniſts by the ſame name. We ſaw a ſmall lily of the valley, much leſs than ours, whoſe leaf was heart-ſhaped. They have alſo pirola, golden rod, cudweed, or goldy locks, and a plant with long leaves, whoſe root has two bulbs; it bears, on a lofty ſtem, a bunch of hood-ſhaped flowers; they are not handſome, but have exactly the ſame ſmell as honeyſuckle. There is beſides, a ſort of ſerpent's tongue, or herb without partition, a great quantity of ſmall ſhrubs, which they call ſmall broom; moſt of the marſhes are full of them.

Monday, and Tueſday, the twenty-ninth, after our arrival at Torneo, were employed in putting the obſervatory in order, where the ſextant was to be placed. M. Hellander, the hoſt of Meſſrs. Le Monnier and Celſius, and at whoſe houſe we dined, had a room, like the cotta before deſcribed, which was very fit for our purpoſe. We dug into the ground beneath it to fix the more firmly ſome large ſtones, on which, as a baſe, we were to place the ſextant: we opened the cieling of this room, as we had before done with that of Pello; and M. Stenols, a Swede, ſent into that country to viſit the mines, made a pull, of very ingenious contrivance, to lift with eaſe, and quickly, the covering of the opening of the roof, when it was neceſſary to make an obſervation.

Wedneſday, the thirtieth, the ſky being clear, we haſtened to place the ſextant. Meſſrs. Le Monnier and Celſius had already marked the direction of the meridian in our new obſervatory: we verified it anew; and in the evening the ſextant was ready, ſo that we made an obſervation on the ſtar δ of the Dragon, which we had obſerved at Pello. We moved the ſextant, but in the ſlighteſt manner imaginable, to place it more exactly in the line of the meridian; and we continued taking obſervations every day, the fair weather continuing to the ſeventh of the next month.

The weather was fine, but very cold, and Thurſday, the firſt of November, the river was entirely frozen over between the town and Hapa Niemi: no one however paſſed over as yet upon the ice; but the waters having ſomewhat ſubſided, people paſſed from ſtone to ſtone to the iſthmus of Nara.

We ſaw ourſelves now eſtabliſhed in the town for all the winter; each was obliged to make his own individual arrangements, and at the ſame time to attend to whatever concerned the operations and object of our voyage. From the obſervatory, where the ſextant was, we could not ſee the horizon, nor make any other obſervations than with the ſextant. We cauſed another ſmall obſervatory to be built on the ſide of the water, entirely ſeparated from the houſes of the town: the little Engliſh inſtrument was placed here, which ſerved to take the direction of the meridian, with a pendulum, and a quadrant. Meſſrs. Le Monnier and Celſius took their correſponding heights, regulated the pendulum, determined the ſouth, and a point at the horizon, by the means of which, with the little Engliſh inſtrument, we always found again the paſſage of the ſtars over the meridian. We made new barometers: M. de Maupertuis was very careful throughout the winter in noticing their variations, as well as thoſe of the thermometers, whether filled with ſpirits of wine or mercury, conſtructed upon the principles of M. de Reaumur.

Saturday, the third, the ice of the river was ſtrong enough to allow of paſſing from the town to Hapa Niemi. Sunday, the fourth, M. Sommereux and myſelf croſſed it to go to ſee M. Viguelius at his houſe of Granwik: we were obliged to make uſe of a boat to go from the ſhore to the ice, and again from the ice to land; a ſouth wind had ſwelled the river, by driving up the waters of the gulph, which cauſed the ice to break along the ſides. The water notwithſtanding was much lower than on the twenty-eighth of October, when we paſſed in a boat over the iſthmus of Nara; we croſſed it on foot,

returning from Granwik to the town: it is true, we were obliged to ſtep from ſtone to ſtone. The ice, owing to the rapidity of the water, was not firm there, although the cold was ſo intenſe that our ſhoes were glued to the ſtones, upon our waiting only for twenty ſeconds in the ſame place. M. Marilius, a ſurveyor, arrived from Stockholm to ſee our operations: he was ſent by M. Nodelcreutz, director of the office eſtabliſhed at Stockholm for geography, and charts and maps of the kingdom. It was M. Nodelcreutz who prepared for us in his office the charts of the coaſts and iſlands of the gulph.

The weather continued fine, and obſervations with the ſextant were made every day as well as could be wiſhed: they were continued on Monday night, the fifth; but during the night it began to ſnow. It continued on Tueſday morning, the ſixth, and from that time till towards the end of May; there was neither ice nor earth to be ſeen, there was nothing but ſnow. People began travelling in ſledges on the rivers and lakes, as if upon land. Orders were iſſued, and almoſt as immediately executed, for planting ſmall firs on the ice in avenues along all the places through which the road was to go, which is moſt uſually made over the ice, as ſoon as ſufficiently ſtrong, on account of its being more even, and the ſhorteſt way.

They are obliged every year thus to mark the road, without which it would be impoſſible to follow it; and travellers would frequently be loſt in the ſnow when increaſed to the height of four or five feet. The firſt ſledges which paſs over the ſnow preſs down and harden it: ſoon other ſnow falls, which fills up the road, and which ſucceeding ſledges, keeping the ſame path, harden anew; ſo that by the middle of winter the ſnows which have fallen, or which frequently the winds have drifted into the road, thus hardened, preſent a kind of highway extremely hard, as high as the reſt of the ſnow above the ice or ground.

Wedneſday, the ſeventh, it was ſo cold that the thermometers fell to 20° below the freezing point: in the remarkable year of 1709 it did not fall below 14½°. This extreme cold did not laſt long. Thurſday morning, the eighth, it was much milder. Friday, the ninth, and Saturday, the tenth, it thawed; already a foot and a half of ſnow had fallen; a good part had thawed; but the ice was not yet ſufficiently hard to bear.

Sunday morning, the eleventh, the ſky was partly clear, and we prepared every thing for obſerving the paſſage of Mercury over the diſk of the ſun; but fog ſucceeding, we were not able to make the leaſt obſervation. The weather became more cold, and it froze very hard till Wedneſday night. Monday, the twelfth, was a grand holiday, the feaſt of All Saints, according to old ſtile, which is followed by the Swedes: in the morning were two ſervices in the church of the town, and one in the afternoon.

The laſt veſſels were not yet returned from Stockholm; they were expected with impatience, and much apprehenſion was entertained for them from the north winds, and more rigid froſts, which would freeze the Gulph of Bothnia. It created much joy on Thurſday morning, the fifteenth, to behold the wind turn to the ſouth: it continued Friday, the ſixteenth, with ſnow from time to time, and a beginning of thaw, which laſted throughout Saturday, the ſeventeenth, and Sunday, the eighteenth. The wind was continually ſouth, and very violent; the ice began to be dangerous; a horſe harneſſed to a ſledge was drowned, but the men in it were ſaved. The violence of the wind threw ſo much water from the gulph into the river, that our little obſervatory was already a foot under water: Meſſrs. de Maupertuis, Le Monnier, and myſelf, went in a boat to bring away the quadrant, the pendulum, and the Engliſh inſtrument; which however we could not effect without being up to the knees in water.

Miſs Bek, the lady to whom the medicines were ſent from Pello, was lately married to Dr. Ervaſte: it was he who preached on Sunday; the ſubject was the father of a

family celebrating the nuptials of his ſon. Monday, the nineteenth, the ſame mild weather continued, with a violent wind. Thurſday, the twenty-ſecond, the interment of a young girl, who died the fourth of the month, took place: ſhe was expoſed for fifteen days at her mother's, with her face uncovered; all the inhabitants of the town and neighbourhood attended the funeral; from all quarters people were flocking in ſledges, the ice having become firm again, and travelling ſafe; there was only half a foot of ſnow. I went with M. Camus over the ice to Matila on Friday, the twenty-third, to viſit M. Piping, our firſt hoſt; it was ſcarcely two o'clock when we ſaw the ſun ſet.

The ſhips which were expected from Stockholm had arrived pretty near the ſhore on Saturday, the ſeventeenth of the month; but the ice had prevented their reaching it, and was not ſtrong enough to bear on ſledges the merchandize they brought; many of the men had got to the town over the ice; my hoſt was one of the number, and had arrived on Saturday laſt. This day, the twenty-fourth, the ice was ſufficiently firm, and ſome of the goods were brought on ſhore: they conſiſted of grain, rye, rice, cabbages, ſalt, apples, and ſome oranges; till four days more they did not truſt their heavier commodities to the ice, leſs capable of bearing, and more dangerous on the gulph than what it was in the river.

Although the different obſervations made at Torneo and at Pello all agreed to two or three ſeconds, and though there was no ground for ſuſpecting any injury to have happened to the inſtrument, in its paſſage from Pello to Torneo, particularly as it was tranſported in a boat; M. de Maupertuis, always as ſcrupulous as he had been upon the mountains with reſpect to the obſervations on the angles, thought of nothing but of contriving means for verifying the obſervations made with the ſextant. We talked of taking it back to Pello; but it was reſolved, inſtead of this, which was a difficult expedient, and would have taken a long time to tranſport it to Mattila, a quarter of a league from Torneo, and obſerve whether, after bringing it back and replacing it in the obſervatory, ſubſequent obſervations made upon the ſame ſtar would have the ſame reſults, ſo proving no alteration in the inſtrument.

Tueſday, the twenty-ſeventh, we got every thing ready in order to obſerve as ſoon as the weather would allow us. We began as well to prepare whatever might be neceſſary to us for the meaſure of our baſe; while M. Brunius got made at Ofwer Torneo eight large rods, very ſtraight, each five toiſes long, with a good number of ſupports, according to the idea which we had given him, and which we had entreated him to attend to.

We lived very comfortably at Torneo. M. Duriez, lieutenant-colonel, the rector named Proubſt, that is to ſay, prieſt, anſwering to deans in our dioceſes, our ancient hoſt M. Piping, M. Viguelius, the brother of M. Brunius, made up our general ſociety; they were pleaſant and ſenſible men: as for the reſt, our unanimity and gaiety were ſufficient for making our mode of life agreeable. The inhabitants of the country had conceived a friendſhip for us. M. Helant, our interpreter for the Finniſh language, informed us at dinner on Wedneſday, the twenty-eighth, that ſeveral countrymen wiſhed to go to France with us, where they ſaid they would teach our fiſhermen how to take ſalmon.

Thurſday, the twenty-ninth, the weather became very mild, the thermometers ſtood at the freezing point: the wind was ſouth, pretty ſtrong, and drove the water of the river over the edges of the ice. Saturday, the firſt of December, was fine, and an obſervation was made with the ſextant.

Sunday, the ſecond, two Laplanders from Corpikyla came to Torneo, each drawn by a rein-deer. We had never ſeen theſe ſledges in motion before: the conſtruction of

them is ſingular, and the Laplanders and Finns made uſe of them with wonderful ſkill. I ſhall ſpeak more at large of them at the twenty-ſeventh of December.

Monday, the third, was fine, and we made other obſervations with the ſextant. The cold increaſed of a ſudden ſo much, that on Tueſday morning, the fourth, the thermometer of ſpirits of wine was at 18°, and that of mercury at 22°, below the freezing point. During the night, and all day on Wedneſday, the fifth, it ſnowed. Thurſday morning, the ſixth, we took off the teleſcope from the foot of the ſextant; we put it into its box, and cauſed it to be carried to Mattila, and brought back again into the obſervatory. The good people were very much ſurpriſed at this ceremony; they looked upon it in ſome meaſure as myſterious: ſome of them aſked M. Helant how he came not to attend the proceſſion of the French? We replaced the ſextant on its pedeſtal: that night we made an obſervation which gave the ſame elevation to the ſtar, and ſhewed that the ſextant had not ſuffered by all the motion given it in the porterage: by a ſecond obſervation, made on Saturday, we found ſtill the ſame height for the ſtar.

Wedneſday evening, the ſeventh, M. Brunius arrived, and was to go back on Friday morning: the rods for the meaſure of the baſe were made, as well as the ſupports; but we knew not how to act. Were we to meaſure the baſe now, or defer it until the ſpring? A great deal of ſnow had fallen already, and frequently it ſnowed; ſometimes even the weather was mild, and it rained, as was the caſe all this day; all this rendered the work of meaſurement very difficult, and very laborious. In putting it off till the ſpring, we were ſure of having much longer days; and had a right to expect that the ſurface of the ſnow, a little melted by the rays of the ſun, and afterwards hardened by the froſt at night, would make a cruſt hard enough for us to walk upon, and perform our work with eaſe. Many citizens of Torneo adviſed us to put off the meaſurement till the ſpring, when the days would be longer, and the cold leſs ſevere. M. Brunius and ſome others gave different advice; they ſaid ſome conſiderable thaw might take place ſooner than expected, and we run the riſk of loſing our meaſurements.

After conſulting among ourſelves, Saturday, the eighth, and Sunday, the ninth, it was reſolved that M. Clairaut, M. Celſius, and myſelf, ſhould go to the ſpot to examine if the operation was then practicable. We took two ſledges, and all three departed, with one ſervant, on Monday afternoon, the tenth: we paſſed by Mattila and Neder Wojakala, thence we croſſed the river to go to change horſes at Ofwer Wojakala; from which place we proceeded continually among woods as far as Kukula, on the eaſtern bank of the river, becauſe the ice was not paſſable in the cataracts; they were very rugged there, with large chaſms in them in ſeveral places. From Kukula we croſſed the river again to go to change horſes at Lactilu: we left it at half paſt five o'clock, and arrived at three quarters paſt ſix at Corpikyla, at the houſe of Tepane Piping, where we ſupped, ſlept, and took freſh horſes on Tueſday morning, the eleventh. We paſſed on ſtill among woods, on the weſtern ſide of the river, and paſſed over a ſmall lake in the foreſt of Taipala. We arrived at Witza Niemi, whence we went down upon the ice of the river: we paſſed before Pekila, near to the church of Hieta Niemi, and from there to Coifwunkyla; we changed horſes there, and after leaving Niemiſby, we followed very near the line of our baſe, as far as Mickolen Sari, whence we proceeded to M. Brunius's, where we arrived at noon.

We had a long conference with him on the project we had formed of meaſuring our baſe immediately; he ſtrongly adviſed it, notwithſtanding the difficulties ſtarted by M. Celſius.

Monday it was very cold, and ſtill more ſo on Tueſday. The laſt night while we were at Corpikyla, the wood with which the houſes are built cracked with a loud noiſe, as

as though it was about to ſplit in every direction. Tueſday evening the weather was milder, it ſnowed and ſpoiled all the roads, greatly retarding our return. We were however under no apprehenſions of miſtaking our road, becauſe it was marked by trees on one ſide and the other. We traced the ſame road we came by. The road upon the river was perfectly ſafe except over the cataracts. Above Waojenna and through a good part of its current, there was a conſiderable ſpace not frozen from which continually a prodigious quantity of vapor aroſe, thrown up by the impetuous motion of the water. We arrived at ten o'clock at Torneo: we made our report on the ſtate in which we found the ice and ſnow, and the next day, Thurſday the thirteenth, in the morning, it was reſolved to go and meaſure. We prepared every thing neceſſary for this work, and every one made his individual arrangements.

M. Camus and myſelf departed, Friday the fourteenth, at nine in the morning, to adjuſt the rods with which we were to meaſure, and trace the line of the baſe. Meſſrs. Helant and Herbelot came with us; we had five ſledges, in which we took a quadrant and ſome neceſſary inſtruments, thermometers, files, mallets, and ſeveral iron works for our meaſures. We arrived a little after eight o'clock at the houſe of M. Brunius, where we found one room ſhort of our former accommodation; his ſiſter-in-law, wife of the chaplain of Torneo was on a viſit to him. We managed as well as we could, I had my bed with me, which I laid on a large table.

Saturday the fifteenth, and Sunday the ſixteenth there was dull weather, and it ſnowed occaſionally. Monday the ſeventeenth the weather was fine; we went to look about the courſe of the baſe; on the eighteenth we began to fix ſtakes, and continued our work on Tueſday. Meſſrs. de Maupertuis, Clairaut, Monnier, Celſius, and Sommereux, arrived the ſame day, and Tueſday we were all aſſembled together at the houſe of Mr. Brunius.

We had brought from Paris an iron toiſe well adjuſted, by that of Chatelet, with a ſtandard of iron as well, into which the toiſe exactly entered. Both one and the other were adjuſted at Paris, at a time that the thermometers were 14° above 0. of Reaumur. Wedneſday the nineteenth, we kept them in a chamber of the ſame temperament by means of a good fire. We made five toiſes of fir, which we armed at each of their extremities with a large round headed nail, filing it away till the toiſe exactly fitted the ſtandard. We carried our preciſion ſo far that a ſheet of paper could not enter between the meaſures and the ſtandard. While we were adjuſting the toiſes, beds were prepared for us, and I ceaſed from keeping mine on the table.

Thurſday the twentieth, while M. de Monnier, and ſome others continued fixing ſtakes along the baſe, Meſſrs. Camus and myſelf, with the five toiſes which we had adjuſted the day before, had faſhioned eight long fir rods of the length of five toiſes each. We made for this purpoſe a ſort of long ſtandard. We fixed in the apartment a large nail, and another in the porch, at a diſtance ſome trifle ſhort of five toiſes, we placed ſupports in a line, forming a kind of ſcaffold from one nail to another, we ranged along them our five toiſes end to end very carefully. We then drove our two nails apart, and filed away from them juſt enough to allow of the five toiſes, when they were cloſely joined at their ends to enter between them; the nails being driven into the wooden walls of the houſe. It was between theſe two large nails that we adjuſted our eight rods, as exactly as poſſible of the length of thirty feet. We proved the length of the five wooden toiſes, and afterwards the diſtance of thirty feet, between the two large nails.

We made ready on Friday the twenty-firſt to begin our meaſurement from the northern ſignal. As a great deal of ſnow had fallen, eight machines were prepared to clear the road for thoſe who meaſured; they were large logs of woods faſtened together

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in the ſhape of a triangle, drawn by a horſe, with the moſt acute angle foremoſt, ſo that the ſides encreaſing to the end, ranged the ſnow on both ſides. Thoſe machines, each of which was ſo heavy that one horſe could ſcarcely draw it, did not however ſink deep enough into the ſnow, and had not all the effect, which the country people gave us reaſon to expect, ſo that we made no further uſe of them.

As ſoon as we had arrived at the northern extremity of our baſe, between ten and eleven o'clock, we concerted together, to begin exactly at the centre of the ſignal, and to go on the ice from the ſhore ſome toiſes diſtant from the ſignal: we then divided into two parties, each conſiſting of four meaſurers. Each of us had a pencil; ſome made uſe of paper, others hung a ſlip of board to their neck, on which to mark a ſtroke with their pencil every time they laid down their rod. We did not truſt theſe rods to any of the country people, nor even to our ſervants; they only ſupported one end of them to help us in carrying them; one of us always holding the other, and taking care to unite exactly the nail which ended it, with that at the extremity of the one before. We had the precaution to mark our rods, that they might ſucceed in the ſame order; already we had meaſured 700 toiſes at half paſt two, when night coming on, we returned to the houſe of M. Brunius. That day it was exceeding cold; the thermometer was at 18° below the freezing point. While we were upon the baſe, M. le Monnier drinking ſome brandy out a ſilver cup, his tongue was glued to it in ſuch a manner as to tear off the ſkin.

Saturday the twenty-ſecond it became milder, it ſnowed a little till noon; it did not however interrupt our meaſuring; even till three o'clock, the weather became open, enabling us to ſee ſufficiently well.

Sunday the twenty-third was very mild and clear; while we were on the baſe at noon, we ſaw the ſun entire, elevated about a quarter of a degree, that is to ſay, about half its diameter above the horizon, in the direction of the river; we ſaw it as well on Tueſday the twenty-fifth; it roſe at half-paſt eleven, and ſet half an hour after noon. The weather continued fine and moderate on Monday, Tueſday, and Wedneſday. Meſſrs. De Cederſtrom and Meldecreutz came to ſee us meaſure, and remained with us Tueſday and Wedneſday.

Wedneſday the twenty-ſixth in the evening the cold increaſed; we all ſuffered greatly in returning to M. Brunius's, from which we now proceeded as far as full two French leagues. We got into our ſledges, heated by the exerciſe of meaſuring, and proceeded two leagues in this ſtate without moving our limbs, and expoſed to an extreme cold; notwithſtanding which none of us was materially injured; 'tis true M. de Maupertuis had ſome of his toes froſt nipped; and I for ſome weeks felt pain in my fingers; but this was little to what we had a right to apprehend. Wedneſday evening the thermometer was at 15° below the freezing point, and Thurſday at 25°.

On the twenty-ſeventh, there was yet one part of the baſe to meaſure which was not planted with ſtakes; Meſſrs. Clairaut and Camus went to fix them, while M. de Maupertuis and myſelf undertook a ſhort but terrible excurſion. On taking obſervations of the angles at Avaſaxa, we had omitted to take the height of a tree which entered into the angles obſerved. This could not cauſe any ſenſible error in our obſervations, but M. de Maupertuis was too ſcrupulous to paſs over the ſlighteſt matter. We therefore aſcended Avaſaxa, drawn in pulkas by rein-deer: they are ſledges made like ſmall boats, pointed before, and ending in a keel which is only two or three inches broad. The Laplanders have ſledges of this deſcription five or ſix feet long, which are uſed for tranſporting their dry fiſh, and rein-deer ſkins; but thoſe common among the inhabitants for travelling, which were what we made uſe of, are at moſt only four feet long; the

the deck of theſe ſledges is covered with boards, and on the edge of them a rein deer's ſkin is nailed, which he who travels in the pulka draws over his breaſt, and faſtens with cords round his body, to prevent the ſnow, in which he is ſometimes nealry buried, from entering the ſledge. The principal difficulty is to preſerve a balance, the pulkas having no more footing than the ſkaits which are commonly uſed in France. M. Brunius who accompanied us, accuſtomed to this ſort of conveyance, managed his ſo well that he preſerved a perfect equilibrium; M. de Maupertuis, and myſelf were continually overſetting when we attempted to raiſe ourſelves with a little ſtick on one ſide, we fell over to the other; M. de Maupertuis even bruiſed his arm.

The rein-deer which drew us, are a kind of ſtag whoſe horns are large, with the branches turned down before. Theſe animals ſerve for many purpoſes: the fleſh of them is eaten, which is tender but inſipid; the inhabitants, particularly the Laplanders, dry and keep it for a long time; with the nerves of them they make thread, which is uſed eſpecially for ſowing of the planks of boats together; they eat their milk, and make cheeſe of it, which is not good. Their ſkin ſerves for dreſſes, particularly that of the young ones, the hair of which is ſoft. There is no inhabitant whatſoever, whether Fin, or Laplander, nor even Swede, without his coat of rein-deer ſkin; we as well had each of us one of them: they are called Lapmudes, and are uſed inſtead of great coats. The hair is worn outſide, and it is lined with cloth, ſerge, or another ſkin with the hair turned inwards. Of the ſkin of the old rein-deer, ſtockings or rather pliant boots are made, the hair of which alſo is worn outſide; they are very warm and very ſerviceable for walking with on the ſnow when it freezes; when it thaws they are not worn.

Rein-deer are uſed for travelling in places difficult for horſes to paſs, or in countries where there is a ſcarcity of fodder for horſes, as in the neighbourhood of Kengis, and to the N. of it, that is to ſay, in all the northern part of that continent. Some travellers have pretended that on being told in its ear, the place to which you were diſpoſed to go, the rein-deer underſtood you; this is a mere tale; they are very fleet, but not ſtrong; harneſſed to a ſledge, provided the road were well beaten, they might travel thirty leagues in a day; but when the road is not hard, and well beaten, and the ſnow reſiſts the ſledge, the rein-deer gets on with difficulty, and very ſlowly. It has the advantage of being able to find its food every where. When tired, his maſter, well wrapped up to keep himſelf from the cold, looſens the animal, who does not wander far: he ſcratches up the ſnow, and at bottom finds a white moſs, which is almoſt his only food, ſo that the traveller only carries proviſion for himſelf; he puts it on the head or fore part of the ſledge. A matter which will appear extraordinary is, that on a journey to Wardhus, the traveller is obliged to carry proviſion of wood, on account of paſſing over great extents of country entirely naked, and without trees.

From the houſe of M. Brunius we proceeded over the ice with dreadful rapidity, there the road being beaten as far as Narki, at which place we were at the foot of the mountain. It was entirely covered with ſnow, there was no beaten track, and we had to apprehend falling between rocks, where we ſhould have been overwhelmed in the ſnow. A Fin, who had long and narrow boards faſtened to his feet, walked ſlowly before us to fathom the road; he led with a ſtring the rein-deer of the firſt ſledge; this poor animal ſunk into the ſnow up to its belly, and had great difficulty, as well as thoſe which followed him, to draw us to the top of the mountain; we were frequently obliged to ſtop for them to reſt, and take breath.

We however arrived, and immediately made ready our quadrant of eighteen inches, for taking our obſervations, while two Laplanders and a Lapland woman who ſerved

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us for guides, made a large fire, and the rein-deer were digging in the ſnow, and feeding on the moſs they found. The cold was ſo extreme that the ſnow did not melt before the fire, nor a foot from it. On going down the mountain our Laplanders cautioned us to plunge our ſtick into the ſnow as deep as we could, to leſſen the velocity of the ſledges, and to prevent their continually falling on the hind legs of the rein-deer, which were faſtened to them. When we were at the bottom of the mountain, our Laplanders left their own ſledges at Narki, and each guide ſeated himſelf on the fore-part of a ſledge, and kept it poiſed with ſingular addreſs. We went all the way to the houſe of M. Brunius without once overturning, and very rapidly.

M. Muritius, belonging to the chart and map office of Stockholm, arrived at Torneo, and came to ſee us continue and compleat our meaſurement of the baſe, and returned again to Torneo. We meaſured in two diſtinct parties as before noticed; the reſult of the meaſurement of one was 7406 toiſes, 5 feet 4 inches, of the other 7406 toiſes, 5 feet exactly. The ſecond party in meaſuring fixed in the ice a ſtake at every 100 toiſes. M. de Maupertuis, Camus, and myſelf went on Saturday the twenty-ninth, and Sunday the thirtieth, to be certain that no error had occurred in the number of the hundreds, and meaſured with a long chord of 50 toiſes, the whole length of the baſe.

We completed this at three o'clock in the afternoon of Sunday; a quantity of ſnow fell with a bleak north wind. M. de Maupertuis with M. Helant ſet off for Torneo, to which place Meſſrs. Clairaut, Le Monnier, Sommereux, and Herbelot, had gone the Friday before. M. Camus and myſelf returned to M. Brunius whom we left on Monday morning the thirty-firſt, accompanied by M. Celſius, and two ſervants, and arrived at Torneo at ſeven o'clock in the evening. It was very fine in the morning and ſufficiently temperate, but at four in the afternoon, a very cold South wind blew, with ſnow.

Tueſday the firſt of January was very fine but very cold: the thermometer remained for a long time at 20°, and even fell ſo low as 22° below the freezing point. Wedneſday morning the ſecond, the thermometer of mercury was at 28°, and that of ſpirit of wine at 25°. On the evening of the ſame day, the cold increaſed, the thermometer of mercury was at 31½, and a bottle of ſtrong French brandy was quickly frozen. We heard the wood of which the houſes are built, in the night crack with a great noiſe. The noiſe reſembled that of muſquetry. In ſpite of this dreadful cold, the inhabitants travel a great deal, and ſeem to prefer this ſeaſon for their buſineſs.

Thurſday the third, it ſnowed in quantities: at night the ſky was clear, and Friday morning, the fourth, it was covered with aurora borealis; the thermometers were at 25° and 28°, which they continued to be at, on Saturday the fifth, the day on which they kept Chriſtmas, which they call Jule; the inhabitants paſſed a great part of the day at church, and the reſt in their houſes, very much retired, and occupied with reading, or ſinging the pſalms and canticles of the church.

The thermometer of mercury in the evening was 31°, and Sunday morning the ſixth 33°. An entire bottle of French brandy was frozen in a room without a fire. The evening of the ſame day, the thermometer was at 37°, while that of ſpirit of wine was but at 29°, and this laſt was frozen on Monday morning the ſeventh, and had riſen to the temperature of the cellars of the obſervatory. M. de Maupertuis carried it into his room in this ſtate; immediately after thawing, it fell a great deal, and afterwards roſe to the temperature of the apartment. The weather became milder in the evening, and the thermometer of mercury was at 25°, a quantity of ſnow fell with a South wind.

M. de Maupertuis had begun at the houſe of M. Brunius, while we were meaſuring the baſe, an experiment, which he repeated ſeveral times at Torneo, to aſcertain if the toiſes, and rods of wood, were lengthened or ſhortened by the different temperatures of

air: he kept continually in his apartment two of the wooden toiſes that we had adjuſted in the iron ſtandard, and two others without in the court; he never diſtinguiſhed any ſenſible diminution or lengthening; he was rather of opinion that thoſe which had been expoſed to the cold were lengthened. By the height or diſtance from the zenith of the ſtar δ of the dragon, taken at Pello and Torneo, we obtained the amplitude of the arc of the meridian comprehended between the two obſervatories. We had but to compare it with the diſtance in toiſes from Kittis to Torneo, which we were enabled to calculate after aſcertaining the length of our baſe. The parallel of the obſervatory of Torneo was different from that of the ſteeple, which ſerved for the point of the laſt triangle. We had not meaſured the diſtance between theſe parallels; but from the meaſurement I had made for taking a plan of the town, I knew within a trifle the diſtance between them. We every one were occupied in private, calculating our triangles. M. de Maupertuis has publiſhed thoſe which he made by ſeveral ſucceſſions of triangles, in his book on the *Figure of the Earth*; with all the corrections, and ſubtractions which the moſt rigid geometrician could require.

Beſides our uſual occupations, and the obſervations which we had ſometimes the opportunity of making, although very rarely, every one had ſome diſtinct paſtime: I paſſed many of my leiſure moments in copying fair the plan of the town of Torneo which I had taken, and the courſe of the river comprized within the extent of our triangles: M. de Maupertuis had brought a great number of books which he lent to us: we were rather long at table after dinner and ſupper: frequently viſited each other: went often to ſee our friends in the town and neighbourhood. Theſe together made our time paſs pleaſantly enough.

During the night the wind abated, and Tueſday, the eight, it was fair, and not ſo cold. In the morning I went to ſee our old landlord the burgo-maſter, and afterwards we all went to dine with the lieutenant-colonel who had invited us. There was a large company, we were twenty-nine at table, fourteen ladies and fifteen gentlemen. It was All Saints Day; we ſaw one hundred Finns come out of church at noon, who were returning to their houſes, ſome in town, ſome in the country higher up the river. This ſucceſſion of ſo large a number of ſledges formed a ſingular ſpectacle, and at Hapa Niemi we were moſt advantageouſly placed for ſeeing it.

Wedneſday the ninth was fine and rather mild, as well as the next day; ſtill the thermometers were at 17° to 19°, and although the cold was much more intenſe than it was in France in 1709, we could bear it very well.

Thurſday the tenth, there was a grand dinner at Papilla, or Preſkhot, (the preſbytery, or prieſt's houſe), at Mr. Foulq's the rector of Torneo: during the night, and on Friday the eleventh, it ſnowed with very mild weather; the thermometer of mercury was no more than 3° below the freezing point, and that of ſpirits of wine 5°, inſtead of which difference before the ſevere colds of Sunday and Monday, they were both of them at the ſame degree 4° or 5° below 0.

Saturday the twelfth, was new year's day, a great holiday in this country; it was fine but rather cold. After dinner M. Duriez arrived with his lady; they ſupped with us, and did not leave us till midnight. The cold increaſed continually, and on Sunday the thirteenth, at noon the thermometers were, that of mercury at 27°, and that of ſpirit of wine at 23°. Monday the fourteenth it was leſs cold, and in the afternoon it ſnowed with a ſtrong South wind. Tueſday the fifteenth, the two thermometers were at 13°, it was cloudy, and ſnowed all night.

Thurſday the ſeventeenth it continued to be very mild; at leaſt we found it ſuch, although it froze hard: M. de Maupertuis invited to dinner all thoſe who had ſhewn us civilities,

civilities, and the principal inhabitants of the town: we were thirty-five at table, and treated them handſomely. The court and ſtreet were full of Fins, and children, who came to ſee the novelty of the entertainment.

It was at the time of the fair of Jukas Jerfwi; it begins the fourteenth of January, and ends the day of the Converſion of St. Paul. It is held thirty miles from Torneo, about ſixty French leagues; the citizens of Torneo go there in crowds; they alone have the right of buying there. They are obliged to obtain a permit from the governor of the province to go to this fair; this coſts them three dollars, worth about thirty-four or thirty-five ſous of French money: were they to go this fair without this licence, they would be fined one hundred and fifty dollars Coppermyth, that is to ſay, eighty livres French money, (the ſilver dollar being worth about thirty-four ſous, the coppermyth dollar only eleven ſous.) To go any where elſe requires a ſimilar permit; however, when they are going no farther than Ofwer Torneo, or Pello, the allowance of the lieutenant colonel who commands in the town is ſufficient, and is given gratis. They ſet off for the fair of Jukas Jerfwi, in their ſledges drawn by horſes as far as Ofwer Torneo; there they take ſledges drawn by rein-deer, and ſend their horſes back. They have at the place where the fair is held, a great number of ſhops which belong to them, wherein they dwell. Theſe ſhops which are abandoned during the reſt of the year, compoſe the village of Jukas Jerfwi, with the church and the houſe of the rector. It is there that the citizens of Torneo trade with the Laplanders; they carry there ſome bottles of low brandy, ſyrup which they bring from Stockholm, and dried bread in cakes. The Laplanders in exchange give them cod, and other dried fiſh, ſkins, and dried meat of the rein-deer, bear and foxes ſkin, of different colours, ermines and martins. I wiſhed to ſee this fair; the baſe being meaſured, I had leiſure, but I could not find any ſuitable company to go with, the burgo-maſter not going. I did not much regret it however, the whole country being covered with ſnow, ſo that I could not have diſtinguiſhed either lakes or rivers, ſcarcely even the foreſts.

Friday the eighteenth, the weather was delightful, not at all cold; M. Camus and myſelf had began to turn with exactitude, ſome balls of iron for experiments on the ſimple pendulum. M. Camus alſo himſelf caſt ſome balls of pewter, ſilver, and copper, he turned theſe as well for the ſame purpoſe.

We had alternately ſnow, and fine weather almoſt always cold. The thermometers on Saturday the nineteenth, were at 19° and 21° below 0. Monday morning the twenty-firſt at 12° and 13°; the evening 16° and 18°. Wedneſday the twenty-third, 20° and 22°. All day on Thurſday the twenty-fourth, and all the following night, at the freezing point; with a ſtrong S. W. wind, and the ſnow melted a little.

All day Saturday, all night, and Monday morning the twenty-ſixth, very fine and mild, the thermometers at 1° below 0. This weather continued the remainder of the month, but it frequently ſnowed.

On the laſt day of January the cold began to increaſe, in ſuch manner however, that it frequently all on a ſudden became mild. The variations of cold in this country are extremely ſudden; at times we were almoſt frozen, and immediately afterwards found the cold very eaſy to bear. The thermometers confirm the reality of theſe variations; and that they are not to be attributed ſimply to the individual temperament of men, and leſs to the imagination.

At Stockholm, the idea they entertained of this country was not very correct; it is not to be wondered at that we ſhould be ignorant of it in France. When we came away, M. Le Comte de Maurepas, preſented us with church plate, with directions to make uſe of it, provided our ambaſſador ſhould not diſapprove of our doing ſo. His

Excellency, after conſulting with his friends, told me by no means to perform maſs in the country to which we were going; ſince if we were to give offence in any meaſure to the inhabitants, we might expoſe ourſelves to inconveniencies, which would incapacitate us from executing the work we were upon. Notwithſtanding, the inhabitants of Torneo took no umbrage at our performing the offices of our religion, provided it were in private, and with cloſed doors. Having from motives of prudence abſtained for ſome time, we met with gentle reproaches on the occaſion from M. Foulq the rector, and M. Viguelius.

Sunday the third of February, although the thermometers were at 10° below 0, as it was fine, M. Sommereux and myſelf went to take a walk in the vicinage of the town, as folks in France are wont to do in ſummer a little before ſunſet.

Wedneſday the ſixth, it was much more ſharp, the thermometers ſunk to 20° and 25°. During the night a great wind aroſe, which continued all Thurſday the ſeventh, with ſnow. It was dreadful weather, the wind had raiſed in different places prodigious heaps of ſnow, particularly along the houſes; of many it covered all the windows, and ſome ſmall houſes were buried in the ſnow.

The thirteenth, the Feaſt of the Purification of the Virgin Mary, was celebrated in a very ſolemn manner; there were prayers twice in the town church. Many people received the communion. The cold had ſomewhat abated, the thermometers were not lower than 13° below 0.

Tueſday the nineteenth, the weather was fine and mild; ſome ſnow melted in the ſun, Meſſrs. de Maupertuis, Sommereux, and myſelf, went out walking. This fine weather did not laſt; the ſame evening it became cold, with wind, and ſnow, which continued the two following days. Friday the twenty-ſecond, on going to the ſouthern extremity of the town, I was much pleaſed with the ſingular appearance which the heaps of ſnow drifted by the wind, and collected along the houſes, and on the top, offered. The road through the town was exceedingly rugged, and the maſſes of ſnow by which it was bordered, very much reſembled rocks; notwithſtanding this Meſſrs. Le Monnier and Celſius went to Kimi, where there was a large aſſembly.

Monday the twenty-fifth, it was much colder; the thermometer which was already at 15° yeſterday ſunk to 20°. The burgo-maſter and four Romans who are the Judges of the town, went to meet the governor. He did not arrive till Tueſday morning the twenty-ſixth, and without ſtopping at the town, continued his route to Ofwer Torneo, where he ſtopped a fortnight.

The firſt of March we had a Swediſh officer to dine with us, who ſerved in France, he came from Peterſburg in ſixteen days, and after dinner departed for Stockholm. I conformed to the ancient ſtile in keeping the feaſt days, as the Catholics in Sweden are wont; we kept that of St. Matthias, on Thurſday the ſeventh.

Monday the eleventh at night, M. de Guilingrip, governor of the province, returned from Ofwer Torneo; Meſſrs. de Maupertuis, Clairaut, and Celſius, went to dine with him at M. Silfriſſon's where he lodged. We went to pay our reſpects after dinner.

Saturday the ſixteenth, I made ready a teleſcope, and went to the houſe of M. Viguelius at Grenwick, on the other ſide of the water, to hang a ſecond pendulum, and all of us went over in the evening to obſerve an eclipſe of the moon. We had the whole horizon towards the weſt uninterrupted, which we ſhould not have had in the town. The horizon was thick and full of vapour: we notwithſtanding obſerved this eclipſe of the moon; but we could not obſerve that of any of the ſatellites of Jupiter, becauſe of his not being but very little above the horizon at that time.

Although

Although we had every reaſon to rely upon the exactitude with which we had determined the amplitude of the arc of the meridian, comprehended between Kittis and Torneo, by the obſervations of the ſextant made upon the ſtar δ of the dragon; the ſtar *a* of the ſame conſtellation, paſſing very nigh to the zenith, we formed a deſign of taking advantage of the time which the long winter afforded us, to obſerve again at Torneo, and afterwards at Kittis, the diſtance to the zenith from the latter ſtar *a*. We made ready the ſextant for this purpoſe, and the ſky being clear on the ſeventeenth, eighteenth, and nineteenth, we made the obſervation on thoſe days.

The South was determined at the little obſervatory, built at Torneo upon the edge of the water. Already ſeveral days had paſſed ſince we had fixed ſtakes in the ſnow, following the direction of the meridian: on this line we ſought with a quadrant two points, from which two perpendiculars ſet off, the one anſwering to the grand obſervatory of the ſextant, the other to the ſteeple of the church of the town. We meaſured on Thurſday the twenty-firſt the diſtance between theſe two points, that is to ſay, between the parallel of the church of Torneo, and the parallel of the obſervatory of the ſextant. We found the diſtance 73 toiſes, 4 feet, 5 inches.

Friday the twenty-ſecond the weather was very mild, the ſnow ſunk, and melted a little. Saturday the twenty-third, we took down the ſextant; we put it into the caſes, and prepared whatever was neceſſary for the voyage to Pello, which we propoſed being ing the following Monday. M. de Maupertuis on Sunday the twenty-fourth, gave a grand dinner to the governor. More than thirty perſons were preſent.

On Monday the twenty-fifth, Meſſrs. Clairaut, Le Monnier, Celſius, and myſelf, ſet off one after the other; each having care of the inſtruments, which we tranſported in ſledges; we followed the ſame road we had gone before; and all of us had arrived at nine o'clock in the evening at the houſe of M. Brunius, and the next day, Tueſday the twenty-ſixth, we reached Pello. We could not always keep on the ice of the river, it was too uneven in the cataracts; there were even ſome conſiderable breaks; we were on this account ſometimes obliged to traverſe the woods. We found in them three Lapland families; who had erected there their huts.

Theſe huts were formed of a number of poles twelve or fifteen feet high, one end leaning on the ground, where they formed a circle of about twelve feet: by the other extremity theſe poles joined at the top, and formed a cone. They put over theſe poles ſome rags, and ſome rein-deer ſkins, which only covered a part. The top is entirely open, and ſerves for a chimney for the fire which they make in the middle of this ſort of tent. They paſs their winter thus, very badly clad, and often ſleep with the ſnow for their pillow. When they change their abode, they carry away their rags and deer-ſkins, and leave their poles as they were; ſecure of finding others every where in the foreſts. We ſaw a number of theſe huts which had been abandoned. One of the three families which we met with, conſiſted of twelve perſons, the two others of no more than five or ſix.

When we were at our landlord's at Purainen, we found his court full of Laplanders, with their ſledges loaded with merchandiſe; that is to ſay, cod, dried fiſh, and rein-deer ſkins. Theſe poor Laplanders lay in the middle of the court during a moſt rigid froſt, in ſome of the ſledges which were empty; we even ſaw a child among them who perhaps was not a year old.

Wedneſday the twenty-ſeventh, Meſſrs. Sommereux and Helant arrived with the teleſcope of the ſextant. We had already placed upon mount Kittis a large three feet quadrant, and the inſtrument for taking the South. Thurſday the twenty-eighth, we returned to the mountain, and verified the quadrant by a back obſervation. Friday

the twenty-ninth it ſnowed a little, M. de Maupertuis arrived, and told us that M. Camus was ill, and would remain at Torneo, with M. Herbelot. Saturday the thirtieth, we placed the ſextant on the mountain, and the pendulum of Mr. Graham in the apartment of the ſtone ſhaft, that is to ſay, the apartment of Corten Niemi, where we had conſtructed a ſtone ſhaft. We ſaw a large number of Laplanders arrive in their pulkas, followed by many ſledges full of merchandize; the following days ſome of them came into our rooms; they entered without knocking, and placed themſelves on their knees to aſk alms, making a long ſpeech, of which we comprehended nothing but the word Jeſou Chriſtou. As ſoon as we had given them a piece of money, they immediately aſked the maſter of the houſe for brandy, and after drinking ſome, danced and ſung with all their might in the court; there was no harmony in their ſinging. They have dogs who make ſuch a ſingular noiſe, that we miſtook it firſt for the catterwauling of grimalkins.

It continued to ſnow occaſionally; on Wedneſday the third of April, it ſnowed while the thermometer was at 5° below 0. M. Le Monnier and myſelf faſtened the fixed teleſcope to the ſhaft, and obſerved the paſſage of Regulus for the experiments of the ſimple pendulum; Meſſrs. de Maupertuis, Clairaut, and Celſius were upon the mountain, diſpoſing properly the ſextant for obſerving the paſſage of the ſtar *a* of the dragon. They began to make their obſervation on Thurſday morning the fourth, and continued it the ſucceeding days.

The balls which M. Camus had made of different metals were finiſhed, and M. de Maupertuis had brought them. The pendulum of M. Julien Le Roi, was placed in the ſtone ſhaft room, its rod was ſplit, and was ſeparable into two pieces; the different balls were ſucceſſively fitted to it, to obſerve the length, or the number of their vibrations in a determined time, which was known by the pendulum of Mr. Graham, regulated by the obſervation of Regulus, keeping the temperature of the apartment always the ſame, by increaſing the fire, or ſuffering the admiſſion of cold air at the door.

Thurſday night, the thermometer out of the room was 9° below 0. And Friday morning the fifth, it was 17°; the night was fine, we made the obſervation with the ſextant. M. de Maupertuis had his bed placed in the apartment of the ſtone ſhaft where the pendulums were, in order to be more within reach of preſerving a regular heat. That day the Annunication of the Virgin was celebrated with great ſolemnity: We continued our obſervation on the ſimple pendulums; we made that of the paſſage of Regulus by the fixed teleſcope, afterwards M. Le Monnier and myſelf, went to obſerve the ſtar *a* of the dragon with the ſextant; we were very well ſatisfied with this obſervation: a little after we took the elevation of Venus, at its paſſage to the meridian towards the north; ſhe was 1° 15′ above the horizon. We deſcended from the mountain and entered our apartments on Saturday the ſixth, at three in the morning. The twilight finiſhed at eleven o'clock at night, and the dawn began at one in the morning. The thermometers yeſterday were in the evening at 12° below 0, and this morning they were at 16°. The wood of the houſes cracked, as it had done in the months of December and January; M. de Maupertuis was all the morning obſerving the balls, and I all the afternoon.

Again it was exceeding cold during the night. Sunday the ſeventh, at five o'clock in the morning the thermometer of ſpirits of wine was at 20°, and Monday morning the eighth at 18°. Theſe two days we continued the obſervations of the balls and pendulums. We went to the mountain on Monday to take down and pack up the ſextant, and the other inſtruments, to be ready to return the ſooner to Torneo. The cold ſtill continued, and Tueſday morning the ninth, the thermometers of ſpirits of wine were 17½° below 0: there

there were yet ſome balls and pendulums to make experiments with, which was done on Tueſday and Wedneſday; and on Thurſday, the eleventh, we ſet off to return to Torneo, where we arrived on Friday, the twelfth, in the afternoon.

M. de Maupertuis had ſet off from Pello with M. Celſius, to go beyond Kengis, to look after a great ſtone, on which certain characters were engraven, and which was ſpoken of as a curious monument. They only arrived at Torneo on Sunday, the fourteenth, at ten or eleven at night. We remained at Pello as ſhort a time as poſſible: it was time to come back to Torneo, in order to prevent our being expoſed to the hazard of being obliged to wait five or ſix weeks, or perhaps longer, at Pello. Travelling is altogether impracticable during the height of the thaws, whether by land or water; theſe begin earlier or later, and laſt ſometimes a very long while. The ſnow began to melt, afterwards it froze again, and formed a cruſt ſufficiently hard to bear almoſt every where. On Monday, the fifteenth, the weather was fine; but on Tueſday, the ſixteenth, there was a South wind and much ſnow. The thermometers at 4° below 0.

Thurſday, the eighteenth, in the holy week, the inhabitants went to church; there was a ſermon, but no communion. On [illegible]he nineteenth, they went more generally: they gave a ſermon with the comm[illegible]any received the Lord's Supper. In the afternoon, a ſecond diſcourſe was gi[illegible] the prieſt ſang ſomething from the pulpit. They do not faſt commonly, even o[illegible] Good Friday; they however practiſe ſome mortifications, as they think proper: ſom[illegible] more devout than the reſt ate nothing during the whole of Friday. Saturday, the twentieth, and Eaſter Sunday, the twenty-firſt, very fine and mild weather, the ſnow melted in the ſun. Eaſter Day, the rector and the miniſters did not adminiſter the communion: people, however, went to church, and a ſermon was given morning and evening.

M. de Maupertuis, immediately after his return from Pello, reſumed his obſervations on the lengthening, or diminution of length, of the wooden toiſes, from expoſure to heat and cold. During Eaſter week we obſerved the variation of the needle, which we found to be 5° and about 5′; it was nearly the ſame as we noticed in the Baltic before our arrival at Stockholm.

The houſe which M. Camus lodged at looked upon the bay which the river forms to the Weſt of the town; and one of the rooms was a very fit one to verify the ſextant and its diviſions in, by actual meaſurement upon the ice. M. Camus cauſed the floor of the room to be taken up, in order to fix with more firmneſs, upon a vault which was below, two ſtrong croſs trees, to ſerve as a ſupport for the ſextant, and enable it to move in the line of the horizon with its divided limb. M. de Maupertuis ſent a ſervant to Ofwer Torneo, who brought thence four of the large rods with which we meaſured the baſe, for the purpoſe of meaſuring a ſuitable ſpace for the proving of the ſextant.

The weather was continually changing: at times the ſnow melted, eſpecially when the wind was ſoutherly; at others it ſnowed again, and frequently it was very cold.

Tueſday, the thirtieth, after Low Sunday, there was a great dinner at the rector's, at Preſkhot: we were invited; but as there was to be a prodigious number of gueſts, and as we ſaw ſledges going there from every quarter, M. de Maupertuis, M. Sommereux, and myſelf, did not go, nor M. Camus, whoſe health was not yet perfectly re-eſtabliſhed.

Wedneſday, the firſt of May, at half paſt two in the morning, we ſaw Venus on her paſſing the meridian, towards the north, elevated about 4° above the horizon. It had frozen very hard, and the weather was beautiful; the heat of the ſun melted the ſnow from nine in the morning till ſix at night. M. Camus and myſelf adjuſted to their proper length of five toiſes the four rods which were brought from Ofwer Torneo, and which were found each too ſhort by about half a line.

Saturday, the third, we placed in the ice a large log, with a ſight oppoſite to the room wherein M. Camus had cauſed the ſextant to be fixed horizontally, at the diſtance of 380 toiſes. We afterwards placed a log of wood, as large as the firſt, with a ſight in ſuch a poſition that a line drawn from it to the firſt ſight ſhould fall perpendicularly on the line drawn from the firſt ſight to the centre of the object-glaſs of the ſextant. In this laſt ſpace, of upwards of 380 toiſes, not half a line of difference was found on our twice meaſuring it.

Sunday, the fifth, after maſs, we began to obſerve the angle which the two objects formed at the ſextant: we began on Monday, the ſixth, and finiſhed on Tueſday, the ſeventh. It was yet cold at times; but it began to thaw, the ſnow melted, and occaſionally it rained; all this made the roads very bad. The letters which ordinarily arrived on Sunday and Monday, did not reach us till Wedneſday the eighth. On the firſt of the month I was preſented with ſmall ſprigs of birch in a phial, as flowers are wont to be preſented in France. The warmth of my apartment made the ſprigs open their leaves. By night it froze a little; in the day-time it was fine, or at leaſt mild.

On Thurſday, the ninth, the gr[illegible]ared; being fine, we walked out of the town to the Bolplaſs (bowling-gr[illegible]part of the iſle of Lammas was viſible; notwithſtanding people paſſed over to [illegible] the ice; and there were there already two horſes who had left their maſter's hou[illegible]. At our return, paſſing by the church, we ſaw the funeral proceſſion of a girl; it conſiſted of ten men, dreſſed in black, who carried the bier; the prieſts and aſſiſtants, five or ſix in number, followed, having the father in the midſt of them; after them, another relative of the deceaſed. The proceſſion was very orderly and well conducted: no female accompanied it, it is not the cuſtom; they go to the church before.

Friday, the ninth, and the two following days, are ſet aſide for familiar inſtruction. A catechiſm is made, in which, indifferently, young and old are examined. Thurſday, and Saturday, the eleventh, it is conducted in the Finniſh language, for the men and maid ſervants; and on Friday in Swediſh, for the burghers, who attend very punctually.

Sunday, the twelfth, the weather pretty fine, the thaw continued; and on Tueſday, the fourteenth, the water began to ſpread in quantity over the ſurface of the ice, and make the paſſing over it very difficult. The burgomaſter and M. Viguelius came to reſide in the town till the paſſage in boats ſhould be free, after the melting and diſperſion of the ice. A great number of country people coming to town had planks on their feet, four or five inches wide, and eight feet long: they make uſe of them in winter for hunting with, and travelling over the ſnow, when there is no beaten road. Theſe ſkates are alſo uſeful during the thaws to paſs over the ice with; they hinder it, weak as it is in ſome places, from giving way under them. They uſe, particularly in the foreſts, machines of this deſcription, of no more than ſix feet long.

M. de Maupertuis, before the thaw, cauſed a lump of ice to be cut out of the river; it was two feet thick: we were told that it was frequently thicker; but that the ſnow, which had fallen immediately after the firſt froſts, prevented its becoming ſo thick as uſually it did. The poſt did not arrive until Wedneſday night, the fifteenth, owing to the ſnow, and the difficulty of the paſſages.

Thurſday, the ſixteenth, the weather being pretty fine, we walked into the northern part of the iſland, where more than half the ground was viſible. Friday, the ſeventeenth, and Saturday, the eighteenth, it was colder; ſome ſnow fell, and it froze during the night. Sunday, the nineteenth, was finer. Monday, the twentieth, it ſnowed all day, but it melted immediately along the ſtreets; however large heaps of it remained. Tueſday, the twenty-firſt, it was fine: in walking about we looked for ſome proper

place

place on which to erect a monument commemorative of our expedition, with a ſuitable inſcription. On going out of the town we found a large rock, which was not far from the church; we examined it, and finding it ſolid, began to work upon it. In this country they have no maſons: inſtead of working with the mallet, they make a fire on the rock, and when the part they wiſh to open is ſufficiently heated, they throw water upon it, which makes the rock ſplinter. A letter which M. de Maupertuis received on Wedneſday, the twenty-ſecond, ſtopped the work. We thought of nothing now but returning to France, as ſoon as the navigation ſhould be free. The ſame day, M. de Maupertuis learnt, by a letter from M. de Maurepas, that his Majeſty had granted a penſion of a thouſand livres to M. Celſius.

Friday, the twenty-fourth, was another of thoſe grand prayer-days which I have before noticed. The river brought down a quantity of floating ice, and people began to paſs it, although not without danger. The ſun ſet entirely at ten minutes paſt ten. We aſcended the higheſt part of the iſle of Swentzlar: we obſerved with a quadrant the angle between the ſun at the horizon and the ſignal of Kukama, at the ſame time counting ſeconds by a pendulum which we had placed near the ſpot, in one of thoſe houſes uſed for keeping fodder and cattle in, and which then was empty. The night was very fine: the next morning we returned to take the angle between the riſing ſun on the horizon and the ſame ſignal. The direction of our ſucceſſion of triangles, with reſpect to the meridian, as found by theſe obſervations, differed by ſome minutes from the direction found at Pello. We were at firſt ſurpriſed; but quickly reflected that Kittis and Torneo not being under the ſame meridian, we ought to find ſome difference, on account of the two meridians approaching ſenſibly towards the poles in the country where we were. M. Clairaut very quickly made the calculation of what this approximation of the two meridians amounted to; and it was found, by taking this into computation, the directions of the triangles taken at Kittis and Torneo agreed within half a minute of a degree.

There was now ſcarcely any ice on the river; yet the ſea was quite white with the floats of ice covered with ſnow. There was very little ſnow remaining on the ground, even on the northern ſide of buſhes; and the inhabitants began to ſow their barley all over the iſland.

Sunday, the twenty-ſixth, there was no longer any night; and a fortnight had elapſed ſince our being enabled to read in our apartments the moſt ſmall characters at midnight. I had my fire only once made up in the day. I was much amuſed for a long time, on Sunday afternoon, admiring the addreſs of a citizen of Torneo, who could draw, without having ever been taught, and delineated figures with ſingular ſkill: had he been under the hand of a maſter, he would have excelled in this line; he drew pictures, made coats, and was the only tailor at Torneo.

They kept Eaſter the ſame day as we did, and Rogation Sunday as well. Monday, twenty-ſeventh, and Tueſday, the twenty-eighth, people went much to church: that day they preached on the goſpel which we have for the Rogation maſs. They call theſe days Gonge dagen, the days of proceſſion; they however have no proceſſion, and are ſatisfied with preaching and ſinging the hymns of the church.

I went to M. de Maupertuis to help him to place two pendulums near to each other; he made uſe of them for examining if two pendulums, moving very near each other with unequal vibrations, had any ſenſible influence one on the other: M. de Maupertuis did not find that they had.

The horſes had all proceeded to their ſummer quarters; my landlord ſent for his, which he wanted to go to Kimi. The horſe on his return reſted at his maſter's; and

Wednesday morning, the twenty-ninth, departed of himself to join his companions, which he could not effect without swimming across the river.

M. Viguelius, assistant minister and director of the schools of Torneo, had composed a Latin poem in honour of the King of France, and the academicians which his Majesty had sent into the North; he invited us to dine with him on Wednesday, and gave each of us a copy.

Thursday, the thirtieth, Ascension Day, was kept very solemnly; we kept it also in our little chapel. We had a large company to dine with us: the lieutenant-colonel, with the gravine, which answers to countess, was of the party. Sunday, the second of June, very fine weather, and Monday, the third, the same. I went with M. Sommereux to the highest part of the island to see the sun set: the upper edge passed behind mount Nieva, near to Corpikyla, and shortly afterwards it again appeared on the other side, that is to say, on the right of the mountain; it did not entirely disappear before two or three minutes after eleven.

M. de Maupertuis went in the afternoon to see the vessel which was to carry our instruments and luggage to Stockholm. We began to make ready for our departure; the following days were dedicated to this purpose, and were fully occupied. On Wednesday night, the fifth, many cases filled with instruments were carried on board the vessel, nearly two leagues distant from Torneo: the sea and the river are so shallow as not to allow vessels to approach nearer to the town. We took our leave: M. de Maupertuis rewarded, in a noble manner, all those who had rendered us service, and we thought no longer of any thing but our departure.

DEPARTURE FROM TORNEO TO RETURN TO FRANCE.

All the instruments, baggage, and one of our coaches, were put on board a ship belonging to Torneo, which was speedily about to sail for Stockholm. Sunday, the ninth, Whit-Sunday, I said mass early; and M. de Maupertuis, after hearing it, had every thing ready to go by sea to Stockholm. Messrs. Le Monnier, Sommereux, and Herbelot, were to accompany him; Messrs. Clairaut, Camus, Celsius, and myself, intending to go by land, in the coach which for that purpose was left behind at Torneo. The wind became fair in the afternoon; and as M. Le Monnier, who was gone to Kiemi with M. Celsius, was not returned, M. Clairaut took his place, and went after dinner with Messrs. de Maupertuis, Sommereux, and Herbelot, to embark on board the vessel in the harbour of Puralakti, two or three leagues from the town: Messrs. Camus, Helant, our interpreter, and myself, accompanied them on board; we saw them set sail at seven in the evening, and returned in one of our boats. We went to Hapa Niemi to take leave of the lieutenant-colonel, and at ten o'clock got back to town, where we met with M. Le Monnier returned; M. Celsius came back during the night, that is to say, towards midnight, for there was continual day. Monday morning, the tenth, M. Camus and myself looked to our coach being put in order, and got every thing ready for setting off.

It was two in the afternoon when we left the town: we passed in a boat with our coach at Hapurunda, where we were to find horses; we had much trouble in obtaining any, they had but lately returned to their summer quarters: a number of them, however, was brought, but very meagre, not having yet got over the fatigues of their winter service. We at length set off at five o'clock: there was yet some snow along the coasts of the gulph; we found some at Sangis, where we arrived on Tuesday, the eleventh, at half past one in the morning. We could not obtain horses here until the afternoon, and then very bad ones: of the four which were brought us, only two could draw; M. Le Monnier and myself were obliged to mount the other two, which were badly

ſaddled, and had much difficulty in keeping on their legs. We arrived at Calix towards ſix in the evening: thence on Wedneſday, the twelfth, at ten in the morning, at Ranea. In Sweden they obſerve the fourth day of Whitſuntide with more ſtrictneſs than the preceding ones, and we could not get away until Thurſday, the thirteenth, at five in the afternoon. We paſſed at midnight by Old Lullea; they there gave us ſuch bad horſes, that in order to reach Bac, which is only half a mile from Bourg, we were obliged to ſend back twice for freſh ones; it is true, the roads were through ſands, and very bad. Afterwards we obtained better horſes: we were ſeven minutes and thirty-five ſeconds in paſſing over the wooden bridge, which the maps deſcribe to have one hundred and two arches, and notwithſtanding went at a good rate.

On our arrival at Old Pithea, as M. Celſius was conducting us to the proubſt, or rector, we were much ſurpriſed at meeting with one of the ſervants which M. de Maupertuis had taken on board with him. He told us that the veſſel was run upon the coaſt at two miles from the town of Pithea, from which we were at the diſtance of a good French league; that theſe gentlemen had gone to the town, and begged us to join them there. We went immediately, and arrived to dine with them; and after hearing the account which M. de Maupertuis gave of his ſhipwreck, we made arrangements for continuing our journey in company.

Scarcely had the veſſel, on which theſe gentlemen were embarked, left Parnalakti, at ſeven o'clock in the evening, and proceeded three or four hours on its courſe, before the wind changed, and became furious: all Monday they were beaten about by the tempeſt. On Tueſday morning, M. Sommereux, from his bed, perceived the pilot apparently very uneaſy and agitated, and learnt that the veſſel made a great deal of water. At this news every one aroſe and ſtirred about: there was but one pump, at which a part worked, while the others emptied the water with buckets through the ſkuttles. As ſoon as there was any reſpite taken, inſtantly the water gained upon them. The wind was continually changing. They often went up aloft, but could deſcry no land; they could only diſtinguiſh at a diſtance long white flats, which were ſuppoſed to be floating ice. At length, the ſame day in the evening, the wind was more favourable: the pilot ordered all ſails to be hoiſted before the wind, while they continued emptying the water; and at length they diſcovered the ſhores of Weſtro-bothnia. The pilot, who was experienced, and had much frequented the coaſt, found a proper place on which to run the veſſel aſhore; and he did this with ſo much caution and management, that the ſhip was no ways damaged by it. They had thrown overboard a part of the boards with which they were loaded; as ſoon as ſhe grounded, they quickly landed the reſt, with the luggage, and all our inſtruments. It was on the ſkirts of a wood; the ſervants erected tents, and remained there, while M. de Maupertuis and his companions in the ſhipwreck went to the town of Pithea.

M. de Maupertuis departed on Friday, the fourteenth, in the coach which brought us, with Meſſrs. Clairaut, Celſius, and Camus, who was directed to examine with attention the copper mines of Fahlun; while M. Sommereux remained with M. Le Monnier and myſelf at Pithea, until the veſſel was put into condition to reſume its courſe to Stockholm.

Saturday, the fifteenth, the wind being ſoutherly, and favourable for returning from the veſſel to town, Meſſrs. Le Monnier, Sommereux, and myſelf, went with two boats to bring back the coach, which had been embarked at Torneo, and which was with the ſervants, the luggage, and the inſtruments. The veſſel remained there no more; it had been brought cloſer to the town, to be nearer to the workmen who were to refit it; we found it laying on one ſide, and entirely empty. We came back to town, the wind

being favourable, remarkably quick: on the road we had thunder and rain; but in the evening and the night there was fair weather: there was yet ſome clouds; and I remarked at midnight that the ſun illuminated them as far as to the horizon on the ſide of the ſouth, the ſame as with us it does on the ſide of the weſt ſome minutes before riſing: it roſe at nearly half paſt twelve in the morning.

Sunday, the ſixteenth, as our lodging was in front of the bridge, we had the pleaſure of ſeeing all the people come from church: there was a very large congregation; great part of them very well dreſt, and all returning with much decorum. During our reſidence at Pithea I took the plan of it; I went therefore, while all the inhabitants were in bed, to ſtep the principal ſtreets about midnight. The ſituation of the town is ſingular enough; it occupies entirely a ſmall iſland, which has no communication with the town but by a wooden bridge, at the end of which is a gate which ſhuts. The church is out of the town, and people go to it over the bridge. The ſtreets of the town are all ſtraight: in the middle is a little ſquare, regular enough, one ſide of which is made up by the town-houſe and ſchool. This town is half a mile, that is to ſay, a league, from the old town, whence it is diſtinguiſhable. The road leading from one to the other was our cuſtomary walk: having loſt our way one day in the wood, we found a woodcock's neſt, where as yet there was only eggs.

Tueſday, the eighteenth, the veſſel was in proper condition, and we now only waited for a fair wind, to put our baggage and inſtruments on board. It became fair on Wedneſday, the nineteenth; we immediately repaired to the ſpot where the baggage was, and off which part the veſſel had proceeded to lay: we began to load, and continued the next day, the twentieth, in order to depart immediately. We came back to the town, whence we deſigned ſetting off in our coach on Friday morning early, the twenty-firſt; but it was one of thoſe grand prayer-days, on which, under great penalties, they are obliged to attend both at ſervice and ſermon, that we could not obtain horſes until they had come from church.

At length, at four o'clock in the afternoon, Meſſrs. Monnier, Sommereux, and myſelf, ſet off; M. Herbelot, ſhortly after the veſſel grounded, embarked in another, which went from Pithea to Stockholm. When we had paſſed Aby, we came to a river called Byka; our coach was put into two boats joined to each other to paſs it: we then took freſh horſes; we went on to Fraſkayer, and arrived on Saturday, the twenty-ſecond, at ten o'clock, at Sielefflat, which is a large town, where we dined. Leaving it, we paſſed a very broad river, on a wooden bridge, quite new, and very well built. We were ſurpriſed to ſee ſo conſiderable a work entirely finiſhed, having paſſed by there in boats a year before, without ſeeing any preparations for the conſtruction of it.

We arrived at eight o'clock at Selit, where there is a church; and as we could not obtain horſes until the afternoon of Sunday, the twenty-third, we went on with the ſame as far as Gremmerſmark, where we arrived at eleven o'clock: we paſſed the night there, lodging very badly, and very cold; it froze, and they were under much concern on account of the barley. We made ſo much intereſt as to get horſes by ten o'clock in the morning: we paſſed by the ſide of the church of Naſaſtra; afterwards through the village of Saſwar; then acroſs a river, over which was a bridge: we paſſed afterwards a heath, where there were ſome Swedes encamped; the ſentinels cried out in German, Who goes there? they came to reconnoitre, and ſuffered us to go on.

About a mile beyond the camp, at eleven o'clock at night, we arrived at Uhma: we ſupped and ſlept in the inn, which is a very good one; and Monday morning, the twenty-fourth, M. Sommereux and myſelf went to ſee M. Guedergrip, the governor of the province, whom we had met with ſeveral times at Torneo: I found there a letter

which

which M. de Maupertuis had left for me, in which he mentioned that M. Camus waited for us at the copper mines of Fahlun. The houſe of the governor is about a quarter of a mile out of the town: we dined with him, and went to rejoin M. Le Monnier, at Rodbek, where he went in the morning to examine the mineral waters. We left Rodbek at ſix in the evening, and arrived at Sodermiola at eleven o'clock; which, after changing horſes, we left at midnight.

On leaving Sodermiola, we had for three miles and a quarter, that is to ſay, nearly ſeven leagues, a woody country, without any houſe or fields; after which the country is much better, but mountainous. Tueſday, the twenty-fifth, in going down theſe mountains we faſtened our wheels with a cord, which we had fixed to the ſhafts for that purpoſe: the coachmen admired the invention, and exclaimed to one another, *Bra conſt*, that is the excellent plan. They are not wanting of genius; but they ſee ſo few coaches, that it is not wonderful they ſhould be ignorant of this ſimple expedient.

We arrived at Hoonas at eight o'clock at night; we ſupped and paſſed the night there, during which a great deal of rain fell. We left it at five o'clock in the morning of Wedneſday, the twenty-ſixth, paſſing on to Dorkſtat; and by ten in the evening came to the great river Angerman. The watermen made ſome difficulty at ferrying us over, becauſe there was a ſtrong ſouth wind, and the water was much agitated. Nevertheleſs, ſeeing us anxious to get over, they made a deck of planks from one boat to another, after firſt tying and faſtening them very tight, on which they placed the coach, with the wheels on; and thus we paſſed the river, which is full a league in breadth, and the paſſage of which was ſo much the more difficult, from the body of the coach taking a great deal of wind, which happened to be contrary.

North of the great river, from the entrance into Angermania, the country is very mountainous; but ſouth of this great river the country is more even, with many lakes in the vallies. The country as far as Maik is well cultivated: we ſaw more churches alſo; that of Sion, through which we paſſed, is built entirely of brick, as well as another with a ſteeple, which we perceived three quarters of a mile before we arrived at Sundſwald: we ſaw another very little diſtant from this, and in a country well cropt with barley and rye; both in agreeable ſituations.

On Thurſday, the twenty-ſeventh, at half paſt three in the afternoon, we arrived at Sundſwald; it is a little but pretty town: we left it at four o'clock, and arrived at ſix o'clock at Niuranda, and at midnight at Gnarp. The weather was fine, and one could even yet ſee to read. We reached Hermenger on Friday, the twenty-eighth, at three o'clock in the morning: the church at this place is handſome, the belfry of ſtone. We paſſed beſide the town of Hudwickſwald, and arrived by nine at night at Noralea, which is a large place, in the middle of a well cultivated plain. We croſſed at midnight the great river Liuſna in a boat; paſſing on to Skoog and Hamrung, two conſiderable villages, and arrived at Geffle, or Guiewle, on Saturday, the twenty-ninth, a little before noon.

We paſſed all the way without being troubled with gnats till Friday evening; but the laſt night, and on Saturday, they were very troubleſome. We left Geffle on Saturday, at ſix o'clock in the afternoon; all night long we were incommoded with gnats. We paſſed by Bek and Hopo, through an unpleaſant country, as far as Halſtad, which is a large village, ſituated in a beautiful country: from there to Lingſore and Boriklo, which is four miles to the ſouth of Swerſio Kyrka, which is the pariſh. The people returned very late from church on Sunday, the thirtieth, and we were obliged to wait till four o'clock at Boriklo, the road being ſhut with a gate and chain till after ſervice. The road paſſes in two places on cauſeways, very long, elevated above the level, among fields, lakes, and rivers: along theſe cauſeways, which are ſaid to be natural, we met

with ſome houſes, with a number of forges for melting the copper ore. From theſe forges to Fahlun nothing was ſeen but woods, mountains, and ſtones; we arrived there on Sunday, at nine o'clock.

The town of Fahlun, called otherwiſe Copperberg, is very large: it is not ſurrounded with barriers, as are all the other towns of the country; the ſtreets of it are perfectly ſtraight. There are two ſquares, one of which is handſome, large, and regular. North of this is a large houſe, built of ſtone; it compriſes the hall where juſtice is rendered, a cellar, a granary, and a public diſpenſary. Eaſt of the ſquare is a large ſtone church, the belfry of which is lofty; there is in it a very good ring of bells: the church is covered with copper; the gates are of braſs; as for the reſt, it is not ornamented within. In the church-yard are many tombs of metal. Out of the town, on the eaſtern ſide, is another church, built as well of ſtone; it is covered with copper, as well as the ſteeple of the tower, which is very handſome. Beſides theſe two churches, among the buildings belonging to the mine, there is a chapel for the officers and workmen of the mine.

At the ſouth-eaſt of the town is a tolerably handſome houſe, which belongs to the King of Sweden: the governor of Fahlun dwells in it; and the King ſometimes goes there. The neighbourhood is embelliſhed by many pretty country-houſes, which belong to the inhabitants of the town. They are all concerned in the mines; without it they cannot obtain the rights of citizenſhip: they are called Buſemans, that is to ſay, men of the company; and thoſe who work themſelves, Brukande Buſemans. The greater part, inſtead of ſticks, carry little hatchets; they wear hats without loops, like our prieſts, black coats without pockets, black ſtockings, and black gloves.

All the weſtern ſide of the river, for at leaſt the ſpace of half a mile, is entirely barren and rocky. Among theſe rocks are the mines of copper: ſeveral canals conduct by different channels water for working an infinite number of machines. There are to be ſeen the houſes of the officers; beſides theſe, nothing but maſſes of ſcoriæ, which form hillocks; between which roads are kept up for carrying the ore to little carts, drawn by one horſe.

The eaſtern ſide of the river is not ſo barren: there is all along the town pretty good meadows, for three or four hundred toiſes; beyond there are only mountains and woods.

Monday, the firſt of July, we went to ſee the mines, M. Le Monnier, M. Sommereux, and myſelf. They made us all change our dreſs at M. Bentzel's, one of the bailiffs of the mine; they gave us breeches, jackets, waiſtcoats, wigs, and hats, and each of us a guide. We at firſt deſcended to the bottom of a very large pit, about one hundred toiſes wide, and one hundred and fifty feet deep: we went down by ſtairs cut in the rock, and by wooden ſtairs when the rock was wanting. Our guides carried ſeveral bundles of long ſlips of deal: at the bottom of the pit they each lighted one, that we might ſee; and, each preceded by a guide, we entered one after the other through a very narrow cavern. We at firſt deſcended by a great number of ſtone ſteps, which winded frequently, and arrived at a ſquare hole perpendicular to the horizon, three or four feet wide, and at leaſt thirty feet deep, furniſhed on two of its ſides with ladders, which they have been obliged to tie together two by two, in order to get to the bottom of the hole. We entered into a very narrow cavern, through which having advanced a little, we found eight or ten men, almoſt naked, having nothing but their breeches on; they were lying on the ground, and had no other light than what was yielded by ſome deal ſplinters: the way was ſo narrow that we could ſcarcely paſs them. The heats which were emitted from theſe caves, added to that of the flambeaux of our guides, almoſt ſuffocated us; we were every now and then obliged to turn our heads to breathe.

After

After paſſing theſe naked men, we again deſcended, and found ourſelves at length in cavities from thirty to forty feet broad, ſome of which were terminated by very large wells. We paſſed by narrow paſſages to get from one of theſe cavities to the other. The greater part of theſe roads are furniſhed below with a wooden channel, to direct the wheels of the tumbrils, in which the horſes draw up the ore, to conduct it oppoſite to the wells which are cut to the top. It is through theſe openings that the ore is raiſed in very large buckets. Theſe buckets are ſuſpended to cables, rolled over the axis of large wheels, ſome of which are turned by horſes, and others by water. They are ſo conſtructed as while one bucket deſcends, another is raiſed. When it is required to let down a horſe, a band which goes under the whole of his body is faſtened to one of theſe cables.

On each ſide of the canal I am ſpeaking of, there is ſufficient room for a perſon to paſs; and to prevent paſſengers from being hurt by the tumbrils, they are confined by a middle wheel placed under them, to the middle of the channel. In ſome places there are other wooden channels faſtened along the rock, the uſe of which is to conduct the water neceſſary in the working the mine. In theſe ſubterraneous places we ſaw two ſtables for horſes, and a ſmithy wherein tools, and ſhoes for horſes were made.

In all theſe caverns, but above all in the larger ones, we ſaw a great number of workmen, ſome cloathed, others naked; they make a fire on the ſtone they are deſirous of breaking, and when ſufficiently heated, remove it, and directly throw water upon the hot ſtone, which ſplits; on every ſide there are a number of theſe fires. Here we ſaw levers of every deſcription for moving the ore, and placing it within reach of the tumbrils. There various pumps for raiſing water from parts where it was injurious, and directing it to others where it was of uſe. Sometimes we ſaw rivulets running, which apparently loſt themſelves in the crevices of the rock.

There is in theſe mines a great number of roads, which we did not ſee on account of the gates being ſhut. In many of the caverns the rock is ſupported by walls; in others by planking joined together, ſome with iron clamps, others with wooden ſtays. In ſpite of theſe precautions the tops of the mines are not firm, for workmen are frequently either wounded, or cruſhed to death by the fall of large fragments. Theſe unfortunate beings know the danger to which they are expoſed, and in conſequence a ſombre ſadneſs reigns among them, it ſeems as though mirth were prohibited indeed, for they are not allowed either to whiſtle or ſing in the mine. Women are alſo expreſsly forbid going down them.

After having gone through different caverns during two hours, we found ourſelves at the bottom of the largeſt well, and thought it rained abundantly, notwithſtanding the ſerenity of the ſky; the vapours aſcending from all parts reſolving into real rain, which continued to wet us, till we had aſcended two thirds of the height of the well. It is 350 Swediſh ells deep, which make 640 French feet.

We now wanted no more than two guides to bring us to the light of day; one of them placed himſelf with M. Le Monnier and myſelf, in a large bucket, which is uſed to draw up the ore. We had neither of us more than one leg in the bucket, and held by the chain with which it is faſtened to the cable. While aſcending, every now and then our guide touched the ſides of the well in order to direct the bucket, and avoid the points of the rock which projected, as well as the deſcending bucket, the ſhock of which would have been dangerous. The coachman of this ſingular kind of carriage required a conſiderable portion of ſkill, for the ſwinging of the bucket, the turnings which the cord occaſioned by its twiſting, and the ſmall ſize of the well rendered the paſſage

paſſage difficult. Notwithſtanding the horſes which drew us went at a very good rate, we were nine minutes in riſing from the bottom to the top of the well.

There are two water works, which draw up the ore in chains inſtead of cables. They are compoſed of large overſhot wheels, with two rows of buckets, one of which is oppoſite to the other. Theſe wheels are placed in large wooden buildings cloſely ſhut up. At the top of the building is a large reſervoir, into which pumps continually throw up water, carried to it by large wooden pipes; at each oppoſite ſide of the reſervoir, there is an opening with a flood gate which correſponds with the buckets: ſo that by opening one of the flood gates, the water falls into the buckets that anſwer to it, and the wheel turns one way; inſtead of which it turns the other way, upon the ſhutting that and opening the oppoſite flood gate.

We ſaw another water work, which had two wheels, each twenty-ſeven French feet in diameter. It was not at work when we went there; it is uſed for raiſing the ore, and to work a prodigious quantity of machinery for pumping, and other purpoſes. There are beſides ſeveral other machines worked by water and horſes, for drawing ſuch water from the mine as is ſuperfluous; the machinery for working theſe pumps extends to a very great diſtance, and divides, and ſub-divides in a number of branches, for pumping at the ſame time in a great many different places. Some of this machinery moves vertically, others horizontally; and if the mountain be frightful from its rugged rocks, the moving foreſt formed by the different machinery is an object well worthy a curious eye. All the bodies of the pumps are of wood; the wheels, the levers, and all other parts of the machinery are perfectly well conſtructed. All the reſervoirs as well are of wood, very cloſely joined and pitched, ſo as no water can eſcape.

As the ore is drawn it is ſeparated into different heaps, which are the property of individuals. Every proprietor carries away his ſhare in little tumbrils, to take it to the foundry, where they prepare it for fuſion.

The mines are S. W. of the town, about 150 toiſes diſtant from the neareſt houſes. Between the houſes and the town, and the town itſelf, even and along the banks of the river, there is nothing to be ſeen but forges, the bellows of which are moved by water. Near theſe forges are a number of furnaces, where the ore is extended on two layers of wood, which is ſet fire to, and is left to burn for ſeveral days; this is the firſt part of the proceſs for the preparation of the ore, and is called Kalleroſtat.

The ſecond is in a nearly ſimilar kind of furnace; it is longer only and narrower. They then make the metal run in a very violent fire, blaſted by immenſe bellows worked by water. There then remains to refine it only. Of this I ſhall ſpeak preſently when I come to Afſta.

On paſſing near the Kalleroſtats to leeward, the ſmoke is ſo thick and ſulphurous, as not to be reſpirable. Sometimes it entirely covers the town, and although incommodious to the inhabitants, it procures them the advantage of being never troubled with gnats; an inſupportable vexation throughout the reſt of the country.

The officers of the mine made us each a preſent of a Berſeman's hatchet, on the part of the company; they are very ſmall; the inhabitants of Dalecarlia always carry one, which is to them in lieu of a ſtick. The governor invited us to dinner, and ſhewed us the greateſt civility.

Tueſday the ſecond of July, we went to ſee a man who they ſaid was petrified; he had been cruſhed under a maſs of rock. After forty or fifty years, in digging, his body was found; it was ſo little changed, that a woman recollected him; for ſixteen years he had been kept as a curioſity in an iron chair. We ſaw nothing but a body perfectly black, much disfigured, and which exhaled a cadaverous ſmell.

Saturday

Saturday the ſixth, after dinner we took leave of the governor, and departed in our coach, we ſtopped at the country-houſe of M. Trohili the burgo-maſter; it is very elegant; the garden is extenſive, the proſpect diverſified by woods, meadows, and large ſheets of water; in which ſome excellent fiſh were caught for our ſupper. We did not depart till eleven o'clock in the evening; we rode all night through a fine country, and more than two thirds of the way on very large cauſeways. We paſſed the great river Dalu three times on floating bridges.

Theſe floating bridges are large planks of wood joined together, parallel to the current of the river, and laid over other planks ſimilar but longer, which are at right angles with the firſt, all theſe planks are well joined: when loaded with a heavy carriage, they ſink a little, and the water ſometimes comes to the higheſt edge. Theſe floating bridges are of two deſcriptions; the one extends from one ſide of the river to the other, as is the caſe with ſome at Stockholm: the other occupies but a ſmall part of the river, and is croſſed along a cable extended from one ſide of the river to the other, in the ſame manner as our ferry boats. Sunday noon, the ſeventh, we arrived at Afsta, ſeven miles from Fahlun.

Afsta to which name Fors is added, ſignifying forge and cataract, is a very ſmall place ſituated on the ſide of the great river Dalu, below a moſt frightful cataract, which turns a large number of wheels uſed for refining copper. We firſt went to ſee the inſpector of the works who received us very politely; he told us he would cauſe the whole proceſs of refining to be gone through as ſoon as we pleaſed after midnight, for they obſerved the Sunday with great ſtrictneſs.

At midnight we went to ſee them at work. The copper is forwarded from Fahlun to Afsta in blocks in a very impure ſtate, only having undergone the firſt fuſion. When it arrives at Afsta, an exact account is taken of what belongs to each individual, in order to know what he may have to receive after deducting the King's dues, and the charges of refining.

They began by putting into a kind of large crucible cut in the ground, a bed of charcoal, and above that a heap of large ingots or blocks of copper, till there was about 8 or 9000 weight, with a quantity of charcoal above it. This was ſet fire to, and blaſted by two large bellows, which the water kept continually playing, until the ingots were entirely melted; after this the bellows continued to play for a long time, freſh charcoal being added as often as requiſite; now and then the crucible was opened, the charcoal which floated on its ſurface was taken away, and the melted ore ſkimmed of whatever droſs ſwimmed upon it. At length a little before ten o'clock the whole of the charcoal was removed, and the bellows ceaſed from working. On the melted copper a little water was thrown, which not being able to evaporate at the inſtant, rolled backwards and forwards on the ſurface in little drops: this water having chilled the top, a cruſt was formed which was taken off with hooked poles, and other iron inſtruments; water was thrown on a ſecond time, and a ſecond cruſt taken off; and thus until the crucible was empty; it gave, if I miſtake not, forty cruſts, or round ſheets of copper, the laſt of which are always the pureſt and the beſt.

This work was compleated by ten o'clock; the inſpector came to ſeek us, and carried us to ſee the laſt fuſion which was not long. A great number of theſe round ſheets were put into a crucible nearly reſembling the former; they were very ſoon melted, they then dipped out of it with large iron ſpoons, ſuſpended as a lever by chains, the melted matter, which was poured into moulds as large, and nearly of the ſhape of the top of a hat. This matter become ſolid, but yet red, was placed on an anvil, and flattened by the ſtrokes of a heavy hammer, which the water worked. Theſe ſheets of copper were

afterwards cut into narrow plates, and paſſed between rollers to make them even and of equal thickneſs. Three men weighing upon a large pair of ſheers, the lever of which was horizontally placed, cut the plottes, that is to ſay, the large copper coin. Four others, each holding a corner of the pieces with its impreſſion, received the ſtroke of a large hammer, moved by the water which ſtamped the coin. Others cleaned it in rolling caſks. The inſpector went with us every where, and invited us to dine with him.

Tueſday the ninth, at five in the morning, we went in our coach to Meſſinſbrok, a quarter of a mile diſtant from Afsta, to ſee them make braſs. They have three ſubterranean furnaces, each furniſhed with a lid, they let down with large hooks to the bottom of theſe furnaces, nine very deep crucibles, which have been filled with red copper, calaminaris, with ſome raſpings of yellow copper. Sometime after, they take up theſe ſame crucibles, in which the matter is founded; they pour it into a large mould very flat, to make ſheets of braſs; ſome are cut into long ſlips, which are put to heat again in a large oven, wherein the fire is on one ſide, they are afterwards cut for braſs wire, at firſt ſquare, and large, but they are rendered round and ſlender as they pleaſe, by being drawn through guages by means of water that works nippers, which lay hold of the wire on its being forced through the guage, and draw it forward with violence. On one machine there are twelve of theſe guages with their nippers, which the tree of one ſingle wheel works with ſurpriſing celerity. They melt, and work alſo a number of different articles in yellow copper.

The inſpector made us take tea there, and to dine we returned to Afsta, which we left at noon for Salſberg, four miles and an half diſtant from Afsta. The whole road through an even country, but very barren, and almoſt wholly wood: through the whole diſtance we paſſed but three villages. We had bad horſes and did not arrive till eight o'clock at night.

Salſberg is a large and handſome town; the ſtreets are ſtraight, and paved, as well as the ſquare which is handſome and regular. On the twenty-firſt Auguſt in 1736, this town was almoſt wholly deſtroyed by fire, and preſented a very ſad appearance, few of the houſes being yet re-built. The town is watered by a very ſmall river. We went on Wedneſday morning, the tenth, to ſee the ſilver mines, as they were not of any magnitude, we did not go down them, the burgo-maſter ſhewed us all the pits; there is but one machine both for pumping the water, and drawing up the ore. This machine is well made, but not ſo large as thoſe at Fahlun.

At three o'clock in the afternoon, we left Salſberg; for ſeven miles we travelled through a very fine and well cultivated level country; we ſaw quantities of rye, barley, peas, and even very fine crops of wheat; plenty of meadows, ſeveral pariſhes and villages, and but little wood. The reſt of the road was more diverſified; plenty of wood mixed however with cultivated fields in the valleys, and often lakes; we paſſed a ſtrait between two lakes, on a floating bridge, which was drawn over by a rope. We were then then two miles and a half from Stockholm, we travelled all night, and arrived on Thurſday at eleven o'clock in the morning; we ſet up at the ſame inn which we logded at the year before: we met then Meſſrs. de Maupertuis, Clairaut, Celſius, and Herbelot, with all the ſervants, and the luggage which had arrived with the veſſel, after a good voyage.

On Sunday the fourteenth, after ſaying maſs, Meſſrs. de Maupertuis, Camus, and myſelf went to dine with the ambaſſador. On Monday the fifteenth, his Excellency took us to Carlſberg, at ten in the morning, and preſented us to their Majeſties. It was the day of St. Ulric, whoſe name her Majeſty bore; on this occaſion an entertainment was given in the gardens of Carlſberg; the King wiſhed to ſee the drawings of ſome

plants, and animals, of ſome Laplanders, and their dwellings which M. Herbelot had deſigned, and converſed with much familiarity and benignity with all of us; we took leave of their Majeſties and returned to Stockholm.

Tueſday the ſixteenth, M. Clairaut, M. Camus, and myſelf, went to ſee the Count de Teſſin; afterwards I went to Mr. Horleman, and to ſee Mr. Bentzilius, at the king's library. After dinner we employed ourſelves in cleaning the quadrants and other inſtruments which had got wet in the ſhip. Wedneſday the ſeventeenth, we put them in their caſes, and M. de Maupertuis got every thing ready for our departure. For M. Sommereux and himſelf he had engaged a paſſage in a veſſel going to Amſterdam; M. Herbelot and ſome ſervants remained at Stockholm, till ſome veſſel ſhould ſail for Rouen, on board which they might ſhip the luggage and inſtruments. One of the coaches was preſented to M. Celſius; and the other was deſigned to carry Meſſrs. Clairaut, Camus, Le Monnier, and myſelf to Amſterdam, whither M. de Maupertuis went by ſea.

Thurſday the eighteenth, at five in the morning M. de Maupertuis departed with M. Sommereux; Meſſrs. Clairaut, Camus, Le Monnier and myſelf, after taking leave of the ambaſſador, ſet off in our coach at ſix o'clock. We paſſed over two very fine floating bridges, and by midnight arrived at Soder Talge, and on Friday the nineteenth, at eleven in the morning at Nykoping. We did not leave it till ſix in the evening, and arrived on Saturday the twentieth, at four o'clock in the morning at Nordkoping: it is a large town in which there are many ſtone houſes: below a very rapid cataract which works the wheels of an iron forge we ſaw a great number of veſſels. By noon we were at Linkoping, twenty-two miles from Stockholm.

The city of Linkoping is handſome, it is the ſee of a biſhop; there is a cathedral, with a large burial place, which many good houſes look out upon; we lodged in one which was very neat, and in which we felt ourſelves at eaſe, two or three miles before we arrived at the city, there began a handſome cauſeway planted on both ſides with willows. We left Linkoping at ſeven o'clock, we travelled frequently among rocks and came near to the ſide of the great lake Water. For two miles we continued our route along its ſide, at firſt over rocks which ſurround it, and afterwards under the rocks along the margin of the lake. We paſſed through a village very ſmall, and very poor, oppoſite to which, on the top of the mountain the remains of a caſtle are diſtinguiſhed, called Brahuſs, or good houſe, which had been burnt down; to judge from it remains, it muſt have been very handſome.

On Sunday the twenty-firſt, a quarter of a mile further, below the ſame range of rocks from 100 to 150 toiſes from the lake, is the little town of Grenna, thirty miles from Stockholm. The houſes are very ſmall, and all of wood; they form two parallel ſtreets, on the ſame line as the length of the lake. The largeſt of them is very broad and neareſt to the lake; in the middle of the ſtreet, there is a row of lofty trees which divides it from beginning to end, and affords a pretty proſpect; it is nearly 300 toiſes long, running N. N. E.; a third part down this ſtreet towards the N. E. is a pretty regular ſquare, ſituated between the two ſtreets, into which five or ſix little croſs ſtreets fall. The church, the only ſtone building, is about two thirds up the great ſtreet going towards the S. W. Between the town which is quite at the bottom of the rocks, and the lake, is a well cultivated country about 150 toiſes broad, ſtretching along the lake. Theſe are ſeveral gardens in which cherries are very plentiful, which appeared to us to be of a good kind. We arrived there at nine o'clock in the morning, and departed at four in the afternoon.

After travelling about a quarter of a mile at the foot of the rock, upon leaving Grenna, we aſcended it, and paſſed to the eaſt of a ſmall lake. Some time after, we deſcended to the ſide of the great lake, along which we continued to Tonekoping. Weſt of Grenna in the lake we perceived a large iſland with houſes upon it.

At nine o'clock in the evening we arrived at Jonekoping; the town appeared to us large and handſome; a large and very broad ſtreet paſſes through it: the houſes of it are neat, although almoſt all of wood. It is ſituated at the ſouthern extremity of the great lake Water, the water of which as well forms a large baſon within the town. We ſaw no boat either on the baſon, or on the lake, which much ſurprized us; I had before remarked that there was none on the lake near Grenna, nor in any of its extent while we were coaſting it, over the rocks. I was not able to learn the reaſon of it at Jonekoping; we waited only an inſtant there, becauſe there were ſome German noblemen behind us, who took ſixteen horſes, and we were fearful of their getting before us. We left it on Monday the twenty-ſecond, at ten o'clock at night.

We found an even country on proceeding, the road almoſt always ſandy and through woods; to this ſucceeded fields, meadows, lakes, and heaths; we paſſed two rivers, and on Tueſday the twenty-third at four o'clock in the morning, we arrived at Hionby, where we ſaw more empty ſhops than houſes; it is a place famous for markets and fairs. At eight o'clock we arrived at Hambneda or Hamna, where we reſted ourſelves; the hoſteſs took us for people out of their ſenſes, to aſk to go to bed at nine o'clock in the morning. We did not ſet out till five in the evening; we paſſed a river, and afterwards through coppices, where we ſaw beach for the firſt time.

By ſeven o'clock we had reached Trahry; we went ſlowly through the woods the ſpace of two miles, as far as Muſkarid, where we arrived at midnight; afterwards, having got to Fayerhalt one mile and half further, by two o'clock on Wedneſday morning the twenty-fourth; we left it at four o'clock, paſſed by Orkliona, and Lenby, and reached Helſinborg at ſix o'clock in the evening.

We had travelled for a long time through a country, the language of which was not familiar to us. We were delighted with finding at Helſinborg ſeveral perſons who ſpoke French. The town of Helſinborg is not handſome; there is a ſmall terrace on the bank of the ſtrait, where many cannon are placed.

The wheels were taken off our coach, and it was put into a large boat, in which we embarked at ſeven o'clock. The wind was ſoutherly, we kept as near to it as poſſible, and uſing our oars, we paſſed the Sound in an hour, but as the wind and the current had thrown us out of our courſe, and carried us ſomewhat to the N. of the caſtle of Elſineur, we were obliged to pull againſt wind and tide, to get to the town at the S. S. E.; we did not land at Elſineur until nine o'clock: this town is pretty, the houſes have a neat appearance, but they have very few lodgings, and do not behave with much politeneſs to ſtrangers.

We left Elſineur on Thurſday the twenty-fifth, at one in the afternoon; we met with roads very ill kept, and ſometimes very bad, and did not arrive at Copenhagen, until nine o'clock in the evening. We lodged at an inn, which was oppoſite the palace of the King of Denmark. Friday the twenty-ſixth, M. de la Noue, Envoy of France invited us to dinner. After dinner I went with Meſſrs. Clairaut, and Camus, to ſee a royal palace, called Frederikſberg which is handſome, and has fine gardens.

Saturday the twenty-eight, I heard maſs ſaid by the Jeſuits, who officiate at the Emperor's chapel. This chapel is elegant; a number of Catholics were collected there to hear divine ſervice. M. de la Noue did us the honour of viſiting us; and we paſſed

the remainder of the day in looking about the town, canals, ports, and veſſels of the King.

On Sunday, the twenty-ninth, M. de la Noue again invited us to dine; he invited as well M. Herrebon, aſtronomer of the King of Denmark. After dinner we went to M. Herrebon, who made each of us a preſent of ſome books of his compoſing: he gave us a collation in his garden: he had requeſted the company of a clergyman, whoſe dreſs appeared to me extraordinary; he had on a long coat, with a ruff of very fine linen round his neck, and wore a cap, terminated at top by a large round piece of felt, about eighteen inches in diameter, placed horizontally; this is the uſual dreſs of profeſſors of divinity at Copenhagen. We afterwards went to ſee the aſtronomical tower, where ſeveral of the inſtruments of Tycho Brahe are preſerved, and part of the original regiſters of his obſervations. We ſaw the library of the univerſity, over the vault of the church, contiguous to the aſtronomical tower. M. Le Clerc, ſon of the famous Le Clerc, deſigner and engraver at Paris, invited us to ſupper.

Monday, the twenty-ninth, we all went to the King's library, to the ſtables, and the riding-ſchool, where M. Le Grand, Equerry of the King of Denmark then was, and cauſed ſeveral horſes to be mounted; we ſaw hunters and riding horſes very well trained. Thence we were conducted to a royal caſtle in the town, which contains great wealth, a great quantity of gold plate, of a handſome ſhape, and well wrought: we were ſhewn as well cabinets of medals, and natural hiſtory, very complete; with many paintings and ſtatues of great value. The King of Denmark was ten or twelve leagues from Copenhagen, which prevented our paying our court to him. We went to take leave of M. de la Noue, and departed at eight o'clock in the evening.

After travelling four miles, we arrived on Tueſday, the thirtieth, at Roſkild, at one o'clock in the morning, a middling city, the ſee of a biſhop; four miles farther, at Ringſted; and again four miles more, at Slagen, a town much reſembling Roſkild, and near to which is a caſtle, much like a monaſtery. At length, at five in the evening, we came to Korſer, a little town on the point of a tongue of land: in going out of the town is a little caſtle, with a garriſon. From Copenhagen to Korſer is fourteen Daniſh miles; the country is level enough, and the roads good: there are fine foreſts of beech, ſeveral lakes and fields, ſome uncultivated, others cultivated, but the ſoil bad. We gave for each horſe fourteen ſols; the poſtilions are lazy, and fond of drink.

At ſix o'clock at night we were on the ſhore of the Great Belt; we embarked in a ſmall veſſel, on the deck of which, with its wheels on, our coach was placed. The wind was S.; we kept near to it, in order to go W. S. W., and arrived by nine o'clock on the other ſhore; we ſlept at an inn on the quay, the gates of the town of Niuborg being ſhut.

We left that place at ſeven in the morning of Wedneſday, the thirty-firſt; we paſſed through Niuborg, where there is a garriſon, and after travelling four miles, arrived at noon at Odenzee, a handſome and large town: we went ſix miles farther to Middelfaſt, a ſmall town, which we reached at eleven o'clock at night; we immediately embarked to croſs the Little Belt, in a large flat boat. We were obliged to row againſt the wind, which was S. W.; at every ſtroke of the oar (which was very long) we perceived a luminous train of ſparks on the ſurface of the agitated waters. The water of the Belts being the ſame as that of the Baltic Sea, which is ſcarcely at all ſalt, it is preſumable that it is not the agitation of the ſaline particles alone which cauſes theſe ſparks: after having gained on the wind by dint of rowing, we hoiſted ſail and paſſed over in an hour and a half, landing at one in the morning.

We

We ſet off on Thurſday, the firſt of Auguſt, at three o'clock, and after travelling three miles arrived at Kolding, a ſmall town, in which is a garriſon: we travelled four miles farther, arriving by noon at Hatterſleben, a pretty town, but without gates. The poſtilions drove us very ſlowly: we journied all night, and did not arrive at Flenſborg till Friday, the ſecond, at ſix in the morning, where we had to do with very uncivil people, diſobliging, and ſelfiſh in the extreme. We left Flenſborg at eight in the morning, paſſing over nothing but heath, to Renſborg, where we arrived at ten o'clock at night. As the gates of the town were cloſed, we took up our abode with a friendly farmer, who from his courteous behaviour might well have been taken for a ſtranger.

From this place the country houſes, and even ſome in the town, are ſingularly planned: they conſiſt of a large court, to which you enter by a great gate; at the bottom of this immenſe court are ſome apartments; all round, in ſheds, the cattle and poultry are kept, who in conſequence are habituated to live very familiarly with the family: the kitchen is in the corner of the court, which is large enough to ſerve for a coach-houſe; carriages are kept in it.

We continued our journey, paſſing through the town of Renſborg; it is well fortified; it is divided in two by a canal, on which were many handſome boats carrying maſts; the ſouthern part is very handſome. At four o'clock in the afternoon we arrived at Itzehoa; it is a fine town, of great trade, but not incloſed. We ſet off thence at ſix o'clock in the evening; we paſs over a fine fertile country, variegated by meadows, and watered by canals. A mile beyond Itzehoa we ſaw on the ſide of the road a fortified caſtle, ſurrounded by meadows. We ſtopped a little at midnight in the town of Elmeſhem, and arrived on Sunday, the fourth, at eight o'clock in the morning, at Hambourg.

We went to pay our reſpects there to M. Pouſſin, envoy of the King; he kept us to dine with M. de la Chetardie, who was returning from his embaſſy to Pruſſia. On Monday, the fifth, and Tueſday, the ſixth, we dined there again: we cannot ſpeak too highly of the eagerneſs he manifeſted to have us continually with him. Tueſday he gave a dinner to M. de Chavigny, who was going as ambaſſador to Copenhagen.

Wedneſday, the ſeventh, we went to ſee M. Rochefort, commiſſary of the marine, and to take leave of M. Pouſſin. We dined at our inn: towards the cloſe of dinner ſome Pruſſian ſoldiers, extremely tall, gave us a concert with a baſs viol, a baſſoon, violins, a guitar, and French horns.

At four o'clock in the afternoon we ſet off in our coach; and after travelling two miles along the northern bank of the Elbe, we croſſed it at Blankineſe in a very incommodious boat, and conducted by very unſkilful boatmen. We continued our route in this boat along a little river, which diſcharges itſelf into the Elbe, and which allows of decked veſſels to go up of ſome burthen; we landed at eight o'clock in the evening on the bank of this little river. We went on a mile farther to Boxtehode, ſituated on the ſame river; we arrived there at midnight; we changed horſes there, and left it on Thurſday, the eighth, at two o'clock in the morning. There are four or five villages on the road, both ſides of which preſent barren uncultivated plains, as far as near to Bremen. We dined at one of theſe villages, and fared very well; they preſented us firſt with tea and coffee, which is the cuſtom of the country.

At ten o'clock in the evening we arrived near the gates of Bremen, which were already cloſed. Bremen is a very fine and large town; we were told it contained a church for the Catholics.

After travelling a mile we paſſed by Delmerhorſt, continually in a bad country, nothing but heath and ſandy roads. Two miles farther we reached Villenhuſen: we left

left it at ſeven o'clock, going through a very unpleaſant country, compoſed of heath and ſand, and arrived on Friday, the ninth, at three o'clock in the morning, at Klappenborg, all the inhabitants of which are Catholics. We departed at five o'clock, and by nine reached the village of Largning, where we heard maſs. In this country they no longer conform to the old ſtile: the feaſt of St. Laurence was celebrating, whoſe maſs was ſolemnly ſung, accompanied by the organ.

We went afterwards to the town of Haſſelune, thence to Lingen, and arrived on Sunday, the twelfth, at two in the morning, at Nothoron, a ſmall town, in which the Catholics, Lutherans, and Calviniſts, each publicly exerciſe their religion. The poſt-maſters of this country are not famous for their honeſty; they aſked us twice what they had a right to receive, and we were obliged to wink at their roguery, in order to get on. We travelled over heaths almoſt as far as Dolden, a large village, near which is a fine caſtle; there we came to a better country, as well in what regarded the ſoil as its inhabitants.

When we paſſed Dolden, we perceived many caſtles, with fine avenues to them; notwithſtanding there yet was a quantity of heath, on which they cut turf, which is almoſt their only fuel. We arrived at the gates of Deventer, which were ſhut, at midnight: we paſſed the night in the ſuburbs, and on Monday, the thirteenth, at ſix o'clock, entered the town, which is pretty, neat, and apparently well fortified. We took freſh horſes there, and departed at ſeven o'clock: on leaving it we went over a handſome floating bridge of boats. The country afterwards was beautiful for two miles from the town: we then came to a very handſome and very large caſtle, a ſhort time before we reached the poſt-houſe; afterwards a foreſt of beech, and immenſe heaths, without villages, until within a mile of Amersford, where the country begins to improve.

We ſaw there a great number of fields of tobacco, and ſeveral very long buildings for drying it. We paſſed through the town of Amesford, which is handſome and large; the fortifications are not in repair. At midnight we arrived at Narden, as pretty a town as poſſible to be; its fortifications are reſpectable; it is ſeparated by ſeveral canals, over which are bridges. We continued our road along a canal until we arrived at Amſterdam, on Tueſday, the thirteenth, at nine in the morning.

We had again the pleaſure to meet with M. de Maupertuis; he had only arrived the day before: the wind for a long time had been adverſe on his paſſage, and the veſſel had been tempeſt toſt. The reſt of the day, and the ſucceeding one, we employed in examining the city and the port. Wedneſday, the fourteenth, we embarked in a ſchuyt, where we were not very comfortable, till we arrived at Leyden: we there took another boat, much more commodious, and more clean; and again another at Delft, which conducted us to Rotterdam. All theſe towns are elegantly handſome, and yield nothing in neatneſs to Amſterdam.

The banks of the canal are adorned with magnificent houſes, and very fine gardens, particularly oppoſite to the Hague. On one of the bridges of Rotterdam is the braſs ſtatue of Eraſmus, dreſſed as a Cordelier, holding a book in his hand. The veſſels ſeen on every ſide in this town, on the canal, and on the river, offer a very fine ſpectacle.

M. de Maupertuis hired two calaſhes to continue our journey. Friday, the ſixteenth, at two in the morning, we croſſed the Meuſe in a large flat-bottomed boat; at nine we paſſed the Scheldt, at a place where its waters are ſtopped by three fine locks, which ſerve to let down into the canal the barks and ſmall veſſels with which this prodigiouſly wide river is covered. Near the locks there is a very large lanthern at the top of a maſt, with a ladder to go up to it.

We

We ſent back our calaſhes on arriving at the banks of the Scheldt; and after paſſing it we met with freſh ones at Mordyk, which carried us to Antwerp, where we again changed our carriage: we there hired a large coach, which would hold eight perſons.

From Antwerp we had the beſt road poſſible, well paved, ſtraight, and planted with trees on the ſides; afterwards beſide a fine canal, which we paſſed by a bridge, on coming nigh to Bruſſels. The ſide of the canal towards the weſt is adorned with country houſes, and magnificent gardens, where fountains are ſeen playing, and very high and well-cut hedges.

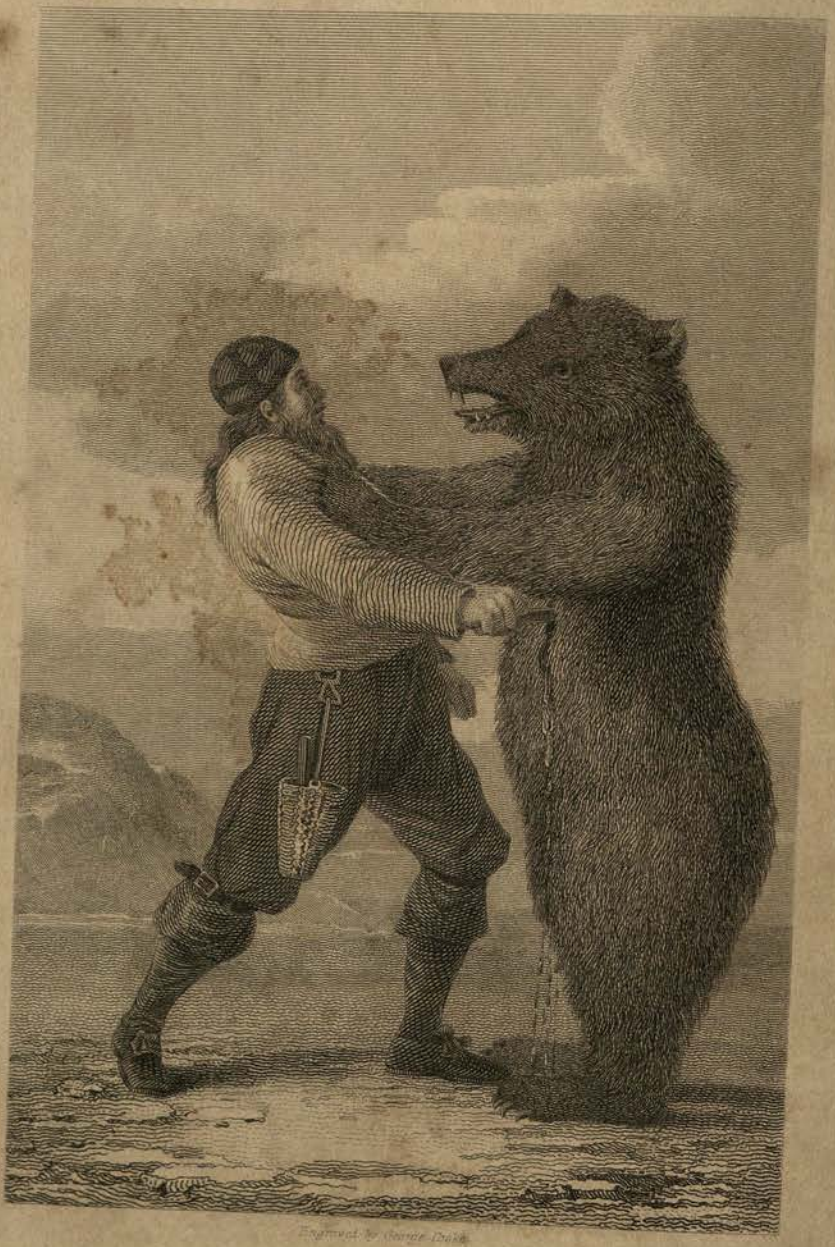
On Saturday, the ſeventeenth, at ſeven o'clock in the evening, we arrived at Bruſſels, whence we followed the cuſtomary road to Paris, where we arrived on Tueſday, the twentieth, at eight o'clock in the morning.

M. de Maupertuis went forward from Perenni; we proceeded to his houſe, and after reſting ourſelves, we completed our voyage by ſupping all together.

We arrived too late on Tueſday to complete our firſt duty, which was to go and render an account of our expedition to his Majeſty, the Cardinal, and M. de Maurepas. On Wedneſday, the twenty-firſt, we all proceeded to Verſailles: we firſt went to M. Le Comte de Maurepas, who received us in the moſt kind manner; he preſented us to the Cardinal Miniſter, and afterwards to the King. The Cardinal obſerved to us that the perfect union which had reigned among us during ſo long a voyage delighted him extremely. M. Le Comte de Maurepas afterwards carried us home to dine with him.

It was ſcarcely poſſible for M. de Maupertuis to prevent the loſs of ſome time, occaſioned by the earneſtneſs of ſo many friends. It was a week after our arrival before he laid the account of our trigonometrical obſervations before the academy; in which, on a large ſcale, he expoſed the ſeries of our triangles.

Friday, the thirteenth of September, we all went to the Comte de Maurepas'; I took my leave of him, and returned to the biſhop of Bayeux, to reſume my former courſe of life.



A Norwegian killing a Bear.

TRAVELS OF M. ARWID EHRENMALM INTO WESTERN NORDLAND, AND THE LAPLAND PROVINCE OF ASEHLE, OR ANGHERMANLAND, IN THE MONTH OF JUNE, 1741.

[From the HIST. GEN. DES VOY. xxv. 464.]

THIS work, tranſlated from the Swediſh, is perfectly new to foreigners, and the tranſlation has been made for the Hiſtory of Voyages and Travels: it will enlarge our knowledge of a country, which, though barren, and but a waſte, is ſufficiently near our civilized ſtates to merit the attention of the reader. Should an invaſion in Europe ever take place, it will, we have no doubt, proceed from thoſe countries which we at preſent deſpiſe. The moſt indigent nations only wait for ſome violent convulſion, ſome rupture in Europe, to fall upon it from all quarters; and perhaps the Nordlanders will perform their part in this great revolution. We regard it as a mere chimera; becauſe hiſtory does not preſent the ſame event twice, and that the paſt, we imagine, far from being an example which ſhould alarm the preſent, is, on the contrary, the guarantee of our ſecurity; ſo does the difference of time and ſituation change the order of cauſes and effects. We confide in the political connections of Europe, which balance all its powers by one another, which give the faculty of foreſeeing, and time to guard againſt, irruption. We truſt in the progreſs of the art of war; in the ſecurity of fortreſſes; in the inexhauſtible reſource of fire-arms; in money, which creates numerous armies; in the multiplicity of ſtates, which mutually thwart the enterpriſes, and retard the progreſs of one another; in commerce in fine, which multiplying and mingling intereſts and wants, diverts towards labour and induſtry that reſtleſs and furious activity of men which formerly inclined them to war. But is not the invention of fire-arms favourable to the northern nations, whom nature has furniſhed with iron to conquer the land? Citadels, which may prevent ſurpriſe, will they bear againſt famine and devaſtation with which it is eaſy to ſurround them? The gold which pays the troops, will it inſpire them with courage? If it ſerve for defence, will it not be an allurement for attack? All the riches of the new world, which flow in three or four channels of Europe, do they not invite the inhabitants of the north towards the ſouth? May not the connections of powers haſten the revolution they are deſtined to prevent? Would not the preponderance of one of theſe northern confederacies bring on the fall and ruin of the equilibrium? Would not each petty member unite with the greateſt, with the ſtrongeſt, to complete the deſtruction of the whole body? Does not commerce point out the way to conqueſt; does it not inſpire temptation? What but a ten years' war in Europe is ſufficient to deprive the richeſt powers in America of their colonies? Why aſſure ourſelves that theſe, at the leaſt ſhock of the mother country, would not throw off the yoke of the power which oppreſſes them? To what purpoſe ſerves the commerce of the two Indies, but to enervate, perhaps even by the riches it yields, the nations who have ſeized on it, to the excluſion of all others. The northern nations, full of vigour, with their forces united, would fall upon our ſouthern countries. They are open to invaſion by the paſſage of the two ſeas, which at preſent form the path of all countries; by the effeminacy of the only inhabitants who have intereſt without power; by the miſery of the only inhabitants who have power without intereſt, to defend the ſtate. What, when Rome poſſeſſed all the riches of Aſia, and all the ſtrength of Europe; a diſcipline unique; a nation trained up to war by the conqueſt of the world; nations which it had enlightened and civiliſed; laws, arts, knowledge, and enjoyments which ſhould have rendered it

dear to the extent of its dominion; even at that time it loſt all, beheld every thing ſink under its feet; in leſs than two ages, the barbarians ſeized on all its weſtern conqueſts, arrived at its gates, overturned its empire, annihilated its power! And we dare to hope that with all its vices, and without its reſources, without ſpirit of union and patriotiſm among the principal families of each nation, all debaſed or corrupted by the ſervitude of courts; without any political link between the people, who, by turns enemies and allies, know neither the intereſts nor ſentiments which ſhould unite or divide them; without attachment for a land, in which the ſoldiers who defend it poſſeſs nothing, where all the fundamental bands of ſociety are relaxed by the licentiouſneſs of the manners, and by the fatal neceſſity of a celibacy which luxury ordains, though proſcribed by nature; we hope that, in ſuch a ſituation, the nations will not dare nor be able to attempt any thing! Slumber in indolence ye that are born to ſlavery: it is of little conſequence to you into what hands your chains may fall.

In the mean time let us conſider the land, we idle contemplators who can only think without acting; we whom the ſpectacle of the vices of the age and our native country ſtrongly repels toward regions dreary indeed to the ſight, but conſolatory to the mind. Let us follow an enlightened traveller, who ſeeks in the ruins and the deſarts of nature the traces and hopes of ſocialneſs: he is an academician of Stockholm, who has viſited regions where the liberty which reigns in his country might give riſe to culture and correct the defects of the climate. This journey will not be found the leaſt inſtructive of this volume, nor of the whole collection. Let us give the traveller leave to ſpeak for himſelf; permitting ourſelves to add and blend our reflections with thoſe with which he has embelliſhed his work.

I acquit myſelf of a duty, by preſenting the obſervations I have been enabled to make in my journey, to the academy * which had countenanced it: whatever good it will meet with, will be the leaſt of the happy fruits it has produced; what defects and errors will be ſeen, only belong to the moſt uſeleſs of its members.

Before commencing the deſcription of the province of Aſehle, which is the principal object of this journey, let me be permitted to ſay a few words of the country which I have traverſed with my faithful companion, the Baron of Cederhielm.

The road leading from Upſal to Flædſund is divided into three branches, towards the ſouth, the north-eaſt, and the north-weſt; the latter, which conducts to Old Upſal, extends in a line ſo ſtraight, that on departure the extremity may be perceived. This road appears to me the image and emblem of the order which ſhould reign in all our ideas, whether of ſpeculation or of conduct, and be directed towards the utility of man. The ſtudies of the learned, the enterpriſes of the politician, conducting to the ſame end, ought equally to concur to the happineſs of ſociety; all which does not lead there, deviates from the paths of nature and of truth.

The country, extending for two miles and a half from Upſal, preſents a ſoil nearly all argillaceous, or fertile, whether in the cultivated lands or the meadows, without any other wood than juniper-trees, which are regarded by ſkilful economiſts as a ſign of fertility. This land, which has never been manured, and which is but indifferently cultivated, produces ſufficiently good crops, with a certain abundance. The paſturages furniſh a turf which might make uſeful fuel. If trees were planted along the hedges, the flocks would find ſhade to repoſe in the night-time, during the long ſtay of the ſun in ſummer, and the peaſants wood, in the winters ſtill longer. Great conqueſts would coſt more to Sweden, and yield leſs, than the knowledge and cultivation of the good lands

* The Academy of Sciences of Sweden.

of

of that kingdom. It is high time that man, who has ravaged and depopulated the earth for ages, ſhould at laſt endeavour to fertilize it completely, and to cover it with inhabitants.

The road leading from Læbi to Ghefle is bordered with a land producing nothing but firs; but if peace continue long, theſe trees, yet young, will become of great utility to navigation. This diſtrict, however, poſſeſſes villages, the fruits of cultivation, and exhibits ſome fertility. The ſand of this ſoil is covered, in ſome places, with a bed of black earth; but this bed is of ſuch little thickneſs, that it is more prejudicial than advantageous to burn the fields, in order to render them fertile.

No land is entirely uſeleſs in the eyes of an induſtrious economiſt. In theſe countries, almoſt deſarts, the intelligent cultivators have left the hills to be covered with woods, while they have diſtributed the plain into fields and paſture-lands. Here are found fields of a ſandy ſoil, which receives fertility by manure; lands a mixture of ſand and argil; and ſoils of pure argil: beneath the beds of ſand there muſt be a bed of argil, of the ſame nature as that of the vallies.

At two miles and a half on this ſide of Ghefle we croſſed the river of *Dal*, which proceeds from Dalecarlia, and paſſes to the manufactory of Aveſta. Near this paſſage we ſaw a fall, or cataract, which, we were told, is the ſtrongeſt of this river. At that place two iſlands divide it into three arms, which form three falls; that on the eaſt the ſteepeſt, and four fathoms high, falls from four rocks, which increaſe the rapidity: the two other caſcades, the one more feeble than the other, are little remarkable, and ſometimes fail of water.

Below theſe falls the ſhores of the river are of a bed of ſand, which at the depth of two fathoms covers a bed of argil. The annual increaſe of the waters in the ſpring, raiſes up the ſand and tranſports it to the bed of the river, where there are formed moving banks, from ten to twelve feet in height: the ice of the river breaking up alſo detaches the ſand, and augments the banks of the river at the expence of its ſhores; thus the ſhores are undermined, and its channel leſſened: the lands become the prey of the waters which ſhould nouriſh them. An attempt might be made to dig the ſhores of the river when the waters are low, and to plant trees, which would protect the lands againſt the inundations: the river then compelled to run in its proper channel, would ſoon deſtroy the banks of ſand which time has accumulated. It would become navigable; and poſterity would bleſs the generation who ſhould have thus prepared for the welfare of its deſcendants.

It would be the means of deriving fertility even from the boſom of this river, which conſumes the countries that it waters, to dig in the argil, or the rich land which is buried under the ſand; the two mixed together would enrich the fields. This work might be attempted during the ſummer: it would often be laborious, on account of the depth of the ſand. But there are places where the argil, lying very near the ſurface of the earth, would reward the labourer for the pains which this method of fertilizing his land would coſt. Thus the river Dal, which, beſides very full of other fiſh, furniſhes great quantities of ſalmon and lampreys to the inhabitants of its ſhores, would alſo become a great reſource for agriculture. There are few countries where the waters do not offer to man more means of ſubſiſtence than it deprives him of: the torrents which ravage in winter, water the lands in ſummer. The great rivers which deſolate their ſhores to the right and left, moiſten the lands far diſtant from theſe ſame ſhores, which they never ceaſe to overthrow. The ſea, which exerciſes over the globe an eternal and inſurmountable empire, receives men and nouriſhes them, when it has diſpoſſeſſed them of their lands, or tranſports them to countries which it permits to exiſt, during ſome

ages, on their foundations. Holland, China, the commerce of the whole world, the fiſhermen of the north and of all the ſavage iſlands, every thing demonſtrates that the ſea, notwithſtanding its deluges, inundations, and ſhipwrecks, is yet an element more bountiful than terrible.

All the country is ſandy from Elfcarleby to Gheſle: at that place Upland ends, and Gheſtri-Keland commences. It is impoſſible too much to admire the road leading to that province acroſs marſhes; or to be weary of beholding the manner in which human induſtry has furniſhed it on both ſides with a rampart of flints, which protect and border it like walls; at the price of what labours the inhabitant of an inacceſſible country has been able to open theſe means of communication, which compenſate for the avarice and the ruggedneſs of nature!

Gheſle is of no great compaſs: moſt of the houſes are built of ſtone and wood together: the ſtreets are narrow, and ſometimes crooked; the market therefore, for want of outlets and openings, has no fixed place; it is even held in the ſtreets, which it incumbers; an inconvenience ſtill more grievous in great cities, where carriages and equipages are multiplied by luxury. But Gheſle is recompenſed for this inconvenience, inſeparable from it ſmallneſs and conſtruction, by innumerable advantages, for which it is indebted partly to nature and partly to induſtry. It is ſituated at the extremity of a gulph, which the ſea has formed half a mile in the land: the veſſels are ſheltered there from the rocks and breakers, which beſet the coaſts of Sweden with dangers: large veſſels, it is true, cannot anchor in the harbour; but as the town is traverſed by a river, this eſtabliſhes a continual intercourſe between the magazines built on its banks, and the merchandiſe unloaded or embarked at the port. A crowd of ſmall boats carry on this communication. A machine, which ſerves to carry off the mud, never ceaſes clearing this channel of navigation and commerce. Gheſle is a commercial and manufacturing town, rich and populous: all the mechanics profit, all the inhabitants labour. This town, happily ſituated between the ſea and the mountains, ſerves as a magazine to the whole country, ſtamps a great value on its mines, and ſcatters abundance throughout its lands. By the mediation of this port, the copper attracts proviſions, and the proviſions occaſion the exportation of the copper: the manufactures ſerve as vehicles for this commerce. Under a heaven which only yields ſnow, is ſeen a bakehouſe of ſugar, a production which only thrives under a burning ſky; this manufacture is without the town: within is a manufacture of tobacco, another production of the torrid zone. But what occaſions one of the ſmalleſt cities of the north to flouriſh in an extraordinary manner, is a ſchool for the thread and linen trade. The principal citizens ſend their children there, as well for their own advantage, as for an example to the people, who find in this ſchool a certain reſource for the maintenance of their families.

I cannot conceal the ſentiment of joy with which my ſoul was affected at beholding an eſtabliſhment ſo patriotic, ſo founded on humanity. The great quantity of flax which grows in this country, and the laborious and careful character of the women, united with the moderate price of proviſions, cannot fail rendering the manufacture of cloth very advantageous, by increaſing the cultivation of flax, ſo natural to lands which produce little elſe. The manufactures of which the materials are foreign are not near in ſo great a proportion; yet the bake-houſe of ſugar, eſtabliſhed at Gheſle, is of great benefit. The proprietor, who prepares five thouſand pounds of ſugar weekly, ſupports many men by this labour. The firſt who opened this branch of induſtry was compelled to buy of foreigners ſugar-loaf moulds, for the value of twenty-four or thirty thouſand copper crowns. But the love of gain has occaſioned the diſcovery in the country itſelf of an earth ſufficiently fine for theſe brick moulds; and the inventors are enriched, as

well as their country, with all the money which would have gone out of it without this diſcovery. Virtues, as alſo vices, whether in morality or politics, never go ſingle: one branch of commerce has given birth to others. Happy the countries whoſe inhabitants love labour, and endeavour to procure it by their ingenuity! When the material of the manufactures is at a great price, and the return of the great advances ſlow, the workmen are long idle, for the enterpriſer will not overcharge himſelf with merchandiſe. In the uncertainty of gain he avoids hazard, or makes it fall on the purchaſer, by raiſing the price of theſe articles: from that time he diminiſhes the conſumption, and leaves unemployed a great many hands, whom often he has taken from agriculture, to which they no more return. Such is the inconvenience of manufactures of luxury. Thoſe of Gheſle are not liable to it: the two-thirds of its inhabitants, which induſtry or commerce does not occupy, are employed in fiſhing; and even the peaſants have recourſe to this buſineſs, when the earth is not ſufficient for their ſubſiſtence.

The rich people poſſeſs in the town a ſchool, and a ſmall college with ſix lecturers. Children to whom nature has given genius or taſte for the ſciences, may there acquire ſufficient theory to perfect the practice of the civil arts.

Gheſle is the reſidence of the governor of Weſtern Nordland, which comprehends Gheſtri-Keland, Helſingeland, Medelpad, Jemteland, and Anghermanland. There was formerly a ſmall caſtle, which the government have not poſſeſſed the pecuniary means to rebuild, but which nevertheleſs would be neceſſary, to protect the town from any inſult.

In Gheſtri-Keland nearly all the peaſants live with comfort; they dwell in houſes tolerably well built: it is becauſe they are citizens of a country where their claſs is an order of the ſtate, a body reſpected by all the others, as the moſt numerous, the moſt powerful, and above all, the moſt uſeful, in the views of nature. It is not inquired in Sweden whether it is proper to give propriety of lands to the peaſants; they have it, and they cultivate them, becauſe they are in poſſeſſion of them.

The inhabitants of Nordland are more active, laborious, healthy, and ſtrong, than thoſe of the ſouth of Sweden; they receive ſtrangers with much more affection, if they are not importunate. Moſt of the Nordlanders paint the interior of their chambers, to enliven their abodes, which the climate renders dreary. They are cleanly in their dreſs, and alſo in their food; but their nouriſhment is not very delicate: cheeſe and butter are ſufficient for the ſimple inhabitants: they eat barley and oaten bread in ſcarcity of rye, which is obſerved to decreaſe, both in quantity and quality, the farther we advance north. But the vices which exiſt in the ſouth are obſerved to diminiſh in the ſame proportion: travellers are there as ſafe as the inhabitants, without locks or bolts. Beggary is very rare, becauſe idleneſs excites no pity; but the wants of old age and infirm indigence are ſupplied by the ſocial affection which unites families. The duties of kindred, the ſentiments of friendſhip, have no reputation, they are ſo common: little falſehood, and no oaths. The candour of youth is perpetuated in the uprightneſs of old age: there are no vices between theſe two ages, which wither the flowers of the former, and the fruits of the latter. The picture of theſe manners, worthy the pencil of Tacitus, is not a mere fiction.

The peaſants of Nordland are excellent cultivators: meadows are the mothers of fields; they are acquainted with this rule of agriculture. In order to obtain the beſt graſs, they every year cultivate a portion of their paſturages: the firſt year they ſow flax without manure; the ſecond, barley, or mixed grain; the third winter they caſt dung on it, eſpecially that of the horſe; they afterwards plough this field, and in the ſpring ſow oats. When the harveſt is got in, they again appropriate this land to meadows,

meadows, and change the land of men into what they call cows' land: the graſs rich and abundant which they derive from it for ſeven or eight years, pays them with uſury both for their manure and labour. Theſe large meadows are interſected by hedges, where each peaſant proprietor has his barn: the fields, in the ſame manner, are divided into as many partitions as there are families or cultivators; theſe latter commonly only ſow the argillaceous lands, which may reward their pains.

If this country poſſeſſed more inhabitants, it would become more fertile. I have ſeen many places capable of cultivation, and much marſhy ground which might be turned into excellent meadows. Not merely that on the heights, there is found much ſtony ſand, which ſcarcely having an inch of rich land, would not be worth the pains of clearing the wood. But good crops might be drawn from many vallies, covered with herbs which grow naturally amongſt birch and oziers: theſe trees are of a green, and vigour which indicate a land fit for cultivation.

The products, as well of the land, of the commerce of grain, the fiſhery, the flocks of which they ſell, the milk and butter, mines, manufactures, and eſpecially of thoſe of flax, pay for the ſubſiſtence, and the impoſts of Nordland. In the weſt of this province they alſo collect hemp, of which they make ſails. They are inferior to thoſe of Stockholm; but if they are not ſufficiently ſtrong for veſſels, they ſerve at leaſt for barks, and to make tents and ſacks.

The peaſants of Nordland have procured a ſpecies of cows, which are ſmall indeed, but yield a great quantity of milk; a profit for which they are indebted to the aſſiduity of their cares, and the quality of their paſture lands. They have excellent hay; and the ſtraw of the grain they ſow, is better than that of rye. They are careful during the ſummer to collect leaves of birch, alders and oziers, which they dry. They mix them in the winter with the bran of their grain, in hot water, and fill large tubs with them, which are in the ſtalls of the cattle.

The forage of the meadows is reſerved for the winter. Thus during the ſummer the Nordlanders lead the cattle, far from their dwellings, into kinds of ſtalls, or they leave them at liberty to graze on the environs. Some of theſe penns are common to whole villages: ſome belong to particular families. A peaſant has in his fold, one or ſeveral chambers where he dwells, prepares and keeps his milk food. Theſe folds are eſtabliſhed in the midſt of the woods, at places where there is tolerably good graſs. Theſe uncultivated ſpots are by degrees changed into meadows, fields, and gardens. The cattle paſs the night in theſe grounds, when they would prepare them for tillage; or elſe they carry the dung there from the ſtalls.

In each family the greater number paſſes the ſummer with their cattle. During that time, they prepare the fallow ground by burning the woods and heaths, incloſe fields: they till them, gather the little they have ſown, ſpin and make cloth. At the time of the hay harveſt, they all go, men and women, to reap and gather in their crop.

The Nordlanders have many goats, a cattle eaſily bred up; but few ſheep, the wool of which is too coarſe to repay them for the trouble it coſts. The ſwine, nearly all the ſummer, ſeek their food in the woods. They are only ſeen in winter in the villages, where they are fed with bark of trees.

The peaſants dwelling near the mines, are thoſe who may poſſeſs the greateſt number of horſes: but they have ſcarcely one for nine cows. Theſe horſes are at the moſt four feet and a half high. The fineſt are thoſe which were left by the Finlandiſh regiments of cavalry in Nordland, during the winter quarters of the war preceding 1740. In proportion as we advance north, the horſes decreaſe in ſize and ſtrength. Thoſe of Weſtern Nordland, are of a ſingular form. They have the head and eyes large, ſmall ears,

ears, very ſhort neck, full cheſt, ſtrait ham, the body of little length but large, ſhort loins between the tail and the belly, the upper part of the leg long, the lower ſhort, the bottom of the leg without hair, the hoof ſmall and hard, the tail large, the hair thick, ſmall feet, ſure and never ſhoed: they are good horſes, ſeldom reſtive or obſtinate, climbing up all the mountains. They owe their ſtrength to the excellent graſs on which they feed. The odour of clover announces fine meadows from afar. When theſe horſes are moved to the paſture lands at Stockholm, they ſeldom paſs a year there without growing lean and loſing their vigour. On the contrary the horſes which come from more northern countries into Nordland, though ſick the firſt year, recover their ſtrength. But on the other hand, ſtallions brought from a more ſouthern climate, would here degenerate, perhaps at leaſt in ſize.

From Gheſle to Hernoſand, we never loſe ſight of the gulf of Bothnia, which by its fiſhery might ſupport the inhabitants of its ſhores; but there are alſo found in the midſt of the woods, lakes, ſome of them extenſive, others ſmaller, which abound in large fiſh, and of good flavour, ſuch as pike, bream, and perch. Theſe lakes are bordered with verdant ſhrubs; they flow in ſmall vallies which they clothe with graſs, and often form by their union rivers in which ſalmon is found. Moſt of theſe lakes are in elevated ſituations, and their waters turn many mills. The trees of this diſtrict are tolerably good in ſome places, and fit for timber-work; but, in general, ſmall, weak, old, and overgrown with moſs.

There is but a ſingle peaſant's houſe between the inns of Hammarangria and Skog, which are at the diſtance of three miles from each other. It is ſituated by a lake abounding in fiſh, near the bridge thrown over the little rivulet ſeparating Gheſtrikeland from Helſingeland. The peaſant who dwells there poſſeſſes lands which, bordering the highway, for the ſpace of a mile, extend half a mile into the country. A wood to the ſouth, ſerves in common for the pariſh of Hammarangria; a wood to the north, ſerves in common for the pariſh of Skog. Each of theſe woods is a mile and three quarters in length, and one in breadth. This country only wants men. Although the whole extent of this road is covered with ſand and aged firs, at intervals there are ſeen lakes and vallies clothed with herbage and wood. Nature is ready to aſſiſt cultivation.

From Skog we proceed to the river of Saderahl, where is found a ferry-boat. This river merits attention. It yields a very conſiderable ſalmon fiſhery. It ſerves to tranſport to Soderhama, the iron which is worked in the mills it turns. Every thing which contributes to the ſubſiſtence of man, to the relief of his real wants ought to intereſt him. The iron mines of Nordland do not preſent to the imagination of the reader thoſe torrents of blood and carnage, with which we ſee the mines of gold overflowing, in the deplorable hiſtory of the New World. Man born good and virtuous, delights to travel, at leaſt in imagination into theſe barren countries of the North, which exiſting under a free and patriotic government, do not repel the heart, by ſcenes of crime and vexation, engendered by one another. Nature there is ſad and even harſh: but there man is not malevolent; man, who nearly over the whole earth occaſions the woes of his kind.

The ſoil of Helſingheland, is ſimilar enough to that of Gheſtrikeland; equally ſtony, more barren, overſpread with ſteeper mountains. Helſingheland has beſides a mixture of every kind of ſoil; gravel and ſand which produce firs, rich and firm argil, marſhes, miry plains, black earth; in fine it is interſected with lakes, of which the bottoms are ſometimes ſand, and ſometimes mud. In the diſtrict where the road borders the ſea, there appear to have been woods fit for timber work; but they have all been cut, and

no more is ſeen than pines and woods of which the blackiſh verdure is eternal, like the ſadneſs and melancholy which it imparts.

The difference obſerved of one province from another, is compoſed of inſenſible ſhades. It gradually augments and diminiſhes. Nature does not proceed by leaps: all her works form a chain, the links of which are imperceptible to the eye which regards them the neareſt; while the vulgar eye only ſees in the picture of the phyſical or moral woad, ſtrong and ſharp colours, which diverſify it, without obſerving the intervals where they mingle and ground with one another. The people vary but little, like the climate and ſoil they inhabit. A ſudden difference is ſeldom ſeen between neighbouring nations. Yet, in the ſame manner as the conſtitution of our bodies depends on our food; the method of thinking and acting is the fruit of education, example, and cuſtom. The government which may be termed the education of the people, modifies the natural diſpoſition of the mind and body, and ſometimes derogates, by tranſient variations, the conſtant law of the climate. But as the policy of ſtates has little influence in Nordland, nature alone has there formed the conſtitution of the men.

The inhabitants of Helſingheland are of thick ſtature with large limbs. They are vigorous, induſtrious, and expert in the mechanical arts. Their culture differs from that of the environs of Stockholm. All their lands are ſowed with ſpelt, excepting one or two acres intended to produce rye. Theſe latter are firſt lightly ploughed in the ſpring; but they undergo ſeveral operations in ſummer. The harrow is paſſed over them eight days after the plough or mattock. The land fit for rye, which is ſo rank as to produce many tares, requires hard labour, but ſhort, and little expenſive, becauſe it does not extend far. Flax is ſowed in the lands prepared for the culture of corn, in untilled land, and in argillaceous earths, where it greatly thrives.

The dung is not conveyed, either during the ſummer, becauſe the corn is then ſtanding, nor during the autumn, becauſe the cattle graze the ſtubble; but in the ſpring, becauſe in that ſeaſon the cold is not ſufficiently ſtrong, nor the ſun ſufficiently hot to dry up the moiſture of the earth. The dung is then of greater bulk and leſs weight. It is ſpread at ſeveral different times, and in thin beds. The manure does not ſo ſoon loſe itſelf in the ſand, and the rain much better diſſolves the ſalts. But the dung and the lands are often burnt, in the idea and hope of increaſing the fertility.

When they reap, the ſheaves of corn are never placed upright in the fields. But if the weather is ſerene, ſeveral ſheaves are arranged in croſſes on one another, which are pierced through, and fixed to the ground by a ſtake ſix feet in length. When the wind has blown for two days on theſe ſheaves, during very dry weather, they are carried into the barns. But during cloudy or rainy weather, they are laid up in a machine called a *haſſior*. Theſe are vertical beams, through which paſs croſs bars; theſe beams are often compoſed of two pieces faſtened together with oziers, to raiſe or lower the croſs bars at pleaſure. The ſheaves are ſpread on theſe bars. The loweſt is a little raiſed above the ground. A bed of corn-ears is placed on it, which is fixed by the ſecond bar which preſſes it. This latter ſupports a ſecond bed faſtened and preſſed by a third bar; and this heap of ſheaves is thus raiſed to the height of four or five fathoms. Under the bar which ſupports the firſt bed from below, is placed a pole faſtened at one of its extremities, with an ozier to the ſecond bar from above. At the other extremity is a hole, and through it paſſes a cord, by which the whole maſs is raiſed, ſo that a man cannot reach it; this pole perhaps raiſed from one extremity of the haſſior to the other. The whole heap is covered with ſtraw. The corn thus collected is left under the roof of the ſtraw, for any length of time, and in all weather. Beyond Hernoſand, towards the north, the haſſior ſerves as a granary, not only for corn, but to dry and preſerve the hay.

The

The hay harveſt laſts longer in theſe northern provinces, than towards the ſouth, though both men and women labour. In Helſingheland, the hay mowed in the morning, in the evening is placed in ſmall heaps. In other parts it is ſpread in beds in the barns, where it is left to dry before it is laid up. In Angherman-land, it is kept in the haſſiors which are by the ſide of the meadows, until the approach of winter.

Formerly the fields of Helſingheland were not incloſed. At preſent they more reſemble gardens than fields, by the moats with which they are ſurrounded. Their economy proceeds ſo far as to draw all the herbs from theſe ditches, which is left to rot to make manure. Green turf and peat equally ſerve for this purpoſe. This manure prepares the lands for the ſowing of the corn.

The corn has two plagues to dread, froſt and mildew. This latter ſtains the ears with a duſky red; but it only blaſts the corn near the mines. The fogs of the morning and evening, ſo deſtructive to corn, in many countries, are ſalutary in Nordland. On the other hand, the ſerenity of the nights ſometimes occaſions ſcarcity.

In the months of July and Auguſt we often experienced a hot day and a cold night. We felt a very ſharp cold, eſpecially in the vallies covered with wood. This might perhaps be a reaſon for clearing the country of all the uſeleſs wood. The naked lands, and the open heights, are leſs expoſed to the cold. If the land were more cleared it would increaſe in population. The rye thrives well in thoſe parts where the wood has been burnt. The ears of corn I have ſeen were full and rich; the ſtraw ſtrong. But a ſmall number of inhabitants cannot undertake an extenſive cultivation. New colonies muſt be eſtabliſhed in theſe deſart diſtricts, or at leaſt the number of families and houſes ſhould be increaſed. But new farms are not formed, becauſe the lands are never divided. A father of a family is only ſucceeded by one of his children; all the others having no ſhare in the eſtate, rather chooſe to become mariners.

Yet if they remained in Sweden, they would be of eſſential ſervice to the ſtate. But after having been trained to the ſea, in Nordland, they often engage at Stockholm with veſſels which ſail to diſtant countries. The allurement of a greater recompence, occaſions them to loſe ſight of their country; they ſerve foreign nations, and ſeldom return to Sweden. In vain do the laws forbid them to leave their province, intereſt prevails, both over the wiſdom of the regulations, and the vigilance of a few magiſtrates, who are unable to manage a country too extenſive. The ordinances which limit the rights of a free nation, are never obſerved, when they would detain in a land, but thinly peopled, men who have no ſhare in the poſſeſſion. They have no native country, who poſſeſs no land. A country is in fact only peopled in proportion to the number of its proprietors. Artizans, ſailors, and ſoldiers, belong to any country who can afford to pay them. Man properly only belongs to the land which belongs to him. Mankind is increaſed by lands. All other methods of population are precarious and tranſient.

Nordland has ſtill more occaſion to attach her inhabitants by poſſeſſion, ſince the ſoil is more unkind. The dales are ſcarcely inhabitable. Moſt of the villages and pariſhes are ſituated on hills. The cold of the climate, which permits but little cultivation, and occaſions frequent ſcarcity, compels the Nordlanders to live, not on acorns, which nature denies them, but even on the bark of trees. From underneath the thick rind of the fir, they take a white cuticle covering this wood, dry it, firſt in their haſſiors, then in the oven, and reduce it to flour. In fruitful ſeaſons, it feeds the ſwine and makes them become very fat. But in time of ſcarcity, the rich people mix this flour with barley, and the poor with bran, and make a kind of bread. It is dry and rough

to the palate; thoſe who eat it, are neither leſs healthy nor vigorous. Perhaps the cheeſe and butter, with which they ſeaſon this hard and inſipid meſs, may ſupply the want of ſubſtance and moiſture. Beholding on one ſide the treaſures and crimes produced by the torrid zone; on the other the want and peace which reigns towards the frozen zone; we are at a loſs for which we ſhould be moſt thankful, the prodigality or avarice of nature! Happy are the countries where ſhe is neither ſo harſh as to compel men to war, nor ſo liberal as to diſpenſe with labour. Such is the ſituation of Nordland.

At the diſtance of half a mile from the ferry-boat of Sæderahl, towards the north-weſt, is found the linen manufactory of *Flors*. We ſaw children of the country, who had been at the buſineſs but three or four years, working with all the confidence and addreſs which might reſult from a long experience. Here are manufactured fine and coarſe cloth, thread ſtockings, night-caps, damaſked table-cloth, as fine as the foreign. Yet it is complained that the works of this manufactory are of unequal texture, and little duration. This defect ariſes from the inequality, both of heat and humidity, which reigns in the rooms where they work. Each workman leans his loom againſt a window; the exterior air is often moiſt, while that of the room is hot. The air which then enters at the crevices of the window, meeting the neareſt threads preſerves them in their full length; and thoſe which are farther in the chamber dry and contract. The warp therefore becomes unequal, ſhorter at one of its extremities than the other, and breaks when worked. It muſt often be renewed and the cloth in conſequence is weakened. When it is uſed, the change of dryneſs and humidity which it experiences, giving an unequal tenſion, occaſions it to yield and break.

The hot water which is kept in theſe rooms, might give a temperate heat, and the vapour ariſing from it, might preſerve the threads in nearly an equal degree of tenſion. But the ſun, whoſe light is requiſite, ſhining on one ſide of the room, ſtill occaſions inconvenience. To remedy this M. Bennet, the director of this manufacture, has buried his ſhop in a ſandy eminence, and conſtructed a large parapet raiſed to the windows, made of bark of trees, moſs, heath, and every where covered with green turf. By theſe means he gives a moderate degree of humidity to his rooms, nearly every where equal, which muſt produce the beſt works. If the manufacture of Flors had not been placed in ſuch ſkilful hands, it would have fallen into diſcredit, from which the greateſt expenſe could have raiſed it again but extremely ſlow; ſince it is not more eaſy to reſtore faſhion to articles, than reputation to men.

Thanks to the cares of an induſtrious adminiſtrator, I have ſeen in the bleaching yard of the manufacture of Flors, thread as fine as that of Holland. The method of ſowing the linſeed in the environs, is the ſame as formerly. But this manufacture has inſpired them with deſire, and afforded them the means, of cultivating flax proper for fine works. They have learned the art of making the flax and cloth more quickly, and rendering them extremely white. When the inhabitants of a country are able to improve the gifts of nature, to procure themſelves a livelihood which affords greater comforts at the ſame time that it requires more labour; when the increaſe of induſtry enſures that of fortunes and families; a commerce more extended, the means of ſubſiſtence multiplied, agriculture brought to perfection, a general activity, a more univerſal proſperity; this moving ſpectacle fills the heart of a true patriot, with a lively and unaffected joy, with love for the labour which produces all theſe benefits, with zeal to employ his talents and power for the happineſs of his brethren. A happy and contented people is never beheld, without a delightful emotion, which makes us rejoice in our exiſtence. We do not contribute to this public felicity, without gathering ourſelves the

firſt fruits. How is it poſſible there can be princes and miniſters on the earth, who do not enjoy this fore-taſte of the immortality reſerved for their labours!

The manufacture of Flors ſpreads induſtry and fertility around it. In its eaſtern environs which border the ſea, few families are found, either rich or poor, who are not occupied in making ſpinning wheels and looms. This labour procures them the means of living tolerably well, notwithſtanding the dearneſs of the corn they muſt buy, and their objection to pay a tax which is well adminiſtered. The town of Soderhamni, which is a mile and a half diſtant from Flors, feels but faintly the influence of this manufacture. It is ſmall, ſituated between two mountains, on the banks of a rivulet. Few houſes are ſeen which are better conſtructed than thoſe of the peaſants around it. To paint them, would be an idle luxury. The inhabitants only labour in order to ſubſiſt. The works of their hands clothe them, and their food would be little reliſhed elſewhere. But the method of ſpinning and making cloth they have brought to perfection. Commerce would thrive well, if the town were not too far from the ſea. Yet fiſhing, the common reſource of all the Nordlanders, a little agriculture and gardening, in a ſoil which produces with difficulty, contribute to ſupport its inhabitants, in that ſtate of mediocrity, which leaves nothing to wiſh for, nothing to regret. Theſe men who lead a life of innocence, are beſides employed in the manufacture of arms for the chaſtiſement of vicious nations.

The forge of Soderhamm is the moſt ancient of the kingdom of Sweden, and at preſent the leaſt excellent. Yet there is ſeen a handſome pump, which is worked by means of a ſingle wheel; a ſimple and wonderful invention of Polhem, a man of great talents in the moſt uſeful arts.

Soderhamm is beſides remarkable for the church of *Ulrica Eleanora*, a tolerably good building. It has ſome ornaments of wood, as its dome, ſufficiently taſteful, though little expenſive. As a man is allured even to piety, by the ſenſes, an organ has been conſtructed in this church, and I can affirm, that it will be one of the beſt in Sweden, for ſtrength, harmony, and purity of ſound. When I ſaw it, beſides the ordinary tones of an organ, it produced thoſe of a women's voice, and German flute: the latter was ſo accurate, that the ear was completely deceived. The name of the artiſt who conſtructed this organ is Daniel Strale. This man deſerves to be much more known, ſince he is unaffected in his manners, mild, without any arrogance, and without that ſpirit of cupidity by which intriguing men obtain the reward of the inventors.

Helſingheland extends to a village two miles to the north of the inn of *Gnarp*. On this road, we meet with nine or ten villages, and ſome lonely houſes. In ſeveral places of this road, we obſerved thoſe ſtones called *lapis violarum ſpurius*. If intelligent miners were ſent to theſe diſtricts, they would no doubt find mines; and this diſcovery would be extremely uſeful to the proprietors of the ſmitheries, eſtabliſhed in the environs. It would even increaſe the number of mills with much greater facility, ſince the whole country abounds with woods and water-falls.

Between *Igghefunid* and *Sanna*, I ſaw on my journey the town of *Houdwikſwald*. It is ſituated on a ſmall tongue of land, ſtretching between the ſea and the lake *Houdwik*. It has a very good and deep harbour. Its inhabitants are employed in fiſhing and the mechanical arts. They manufacture in particular a great number of wooden chairs which are tranſported to Stockholm. Every town which labours for the capital, deſerves ſome fame. The ſmalleſt branch of induſtry is intereſting in a country where nature offers few means of ſubſiſtence. It is pleaſing to ſee the men ſtruggling againſt the cruelty of her denials, endeavouring by labour to avoid that inſignificance from which ſhe appears to have drawn them with regret, to involve them quickly

again. Where the earth is fordid, man is the creator; where the earth yields every thing, man alone is nothing.

On the road leading from Ghefle to Sundſwal, I obſerved ſome hop plantations, on hillocks expoſed to the ſun. Beyond Sundſwal, the only plantation I ſaw was by a ſmall houſe ſituated on the Niouronda. Perhaps, theſe are the laſt efforts of a land, which removing from the ſun, ſinks into the obſcurity and ſolitude of the frozen zone.

When we paſſed through Gnarp, there was a little fair. We ſaw merchants enough, but little merchandiſe. This pariſh is the mart of the towns of Nordland. All commerce is carried on there by reciprocal exchange. The peaſants come to pay for the merchandiſe they have taken on credit; they acquit themſelves by proviſions. This ſpecies of commerce by exchange, is univerſal throughout Nordland, although the merchandiſe is not every where the ſame.

The peaſants who in winter have occaſion for corn, tobacco, or clothes; in ſpring and ſummer for ſalt, iron, and even money, to pay the taxes, borrow what they want of the citizens. When their fortune and credit warrant their ſolvency, they lend them what they require, on condition of repayment at the firſt fair, at the current price of the place, in butter, cheeſe, meat, fiſh, flax, cloth, ſtockings, pitch, and tar, and ſometimes in planks. But if they are little known, the price of what they lend is fixed before hand. The opulent people, who repair to the fair to ſell, proportion the price of their merchandiſes to the want the purchaſer has for them. Thoſe who pay ready money for the commodities they purchaſe for the maintainence of the whole year, might ſell theſe for a greater price, which they would not be obliged to give in return. But the citizens never buy of a peaſant, who ſells to any other but his confidential merchant. The latter on his fide, never buys any more of the peaſant who does not confine to him alone, the whole of his commerce, and endeavours to injure the merchant who ſucceeds him.

It is a ſpecies of monopoly; but it ariſes from the Nordlanders being compelled to bring the produce of their land to Stockholm, and to derive all their conſumption from that city. The government will no doubt correct theſe abuſes, and render the commerce of the capital more favourable to the peaſant. The higher claſs whoſe intereſt it is to participate in every kind of riches, will be enabled to trade in proportion, as the population increaſing in the countries will ſtock the towns with real dealers, and particularly mechanics.

Example has more effect than rule. The inferior claſſes imitate the higher; and villages are modelled after cities. Let manufactures be eſtabliſhed at Stockholm, and the provincial towns, will bring their induſtry and commerce to perfection in imitation of the capital.

From Helſingheland we paſs into Medelpad. The firſt object which meets the attention of the traveller, is the river of Niouronda. It deſcends from Heriedale, deriving its ſource from the mountains; it is large and navigable. Its ſhores are bordered with large woods and rocks; few fields which admit of cultivation, and yet fewer which are tilled. Towards Sundſwal, the land is ſandy, uſeleſs to the inhabitants, and incommodious to travellers. Sundſwal is ſituated in the midſt of a plain, covered with barren ſand, and ſurrounded by high mountains. A ſmall gulf extending for half a mile to the ſea, renders this town extremely fit for commerce, affording to veſſels the facility of coming there, and taking in their cargo almoſt entire. The exports from Sundſwal conſiſt in chairs, pitch and tar, planks, the bark of trees to make bread, works of wood, linen cloth, meat, and milk food. The imports given in exchange, conſiſt of corn, ſalt, tobacco, woollen cloth, ſpices, wine, and brandy.

A dock

A dock for building of ſhips has lately been eſtabliſhed. It might alſo ſerve for the proviſion of the ſalt of all Nordland. A manufactory of wool is alſo ſeen there, which is only in its infancy, but happily enough begun, to increaſe and proſper. The ſheep of the country have a coarſe fleece. If the peaſant were aſſiſted by the advances of the rich proprietors, he would ſoon have flocks with fine wool. For this purpoſe it would only be required to improve the forages by culture.

The church of Sundſwal is of wood and very ancient, as are all the houſes. Oppoſite to the cuſtom-houſe, a church has been conſtructed of free-ſtone, on a ſandy hill. Its form is oval; the walls and roof are finiſhed; but the dome, which is but half made, is every where cracked. The architect is a peaſant of the vallies. But the workman is leſs to blame than thoſe who have employed him. A good architect would ſay, that that the dome has cracked, becauſe the arch is too elevated, or too flat; or becauſe the foundation lies in a moving and little ſtable ſoil; or that the building itſelf, without pillars, is too wide for its length. But I dare affirm that all theſe defects are there united. Beſides, the walls are too thick and the windows ſmall.

The country to the north of Sundſwal, appears to be a little better cultivated than that towards the ſouth. In general, it rather wants cultivators than fertility. The banks of the river *Indahl*, on the right and left, for the ſpace of a league and a half, are deep ſands, but fertile and covered with a thin bed of black earth. Between two large neighbouring mountains are found many cultivable lands, compoſed of ſand and argil. In this proſpect we obſerved a great number of alders thriving on the heights; they reſemble nut teees, in their leaves, bark, and wood; but they are a little larger.

We imagined we ſaw beds of argil, ſometimes thick, ſometimes thin, underneath the ſand of the heaths we traverſed. In ſeveral places we met with people who aſſured us they had found beds of argil, ſometimes of the thickneſs of three fathoms, and ſometime of only a foot. The bank of the rivulets and rivers of the whole of this diſtrict, are very much elevated, and the bed of argil lying under the ſand may be diſtinctly ſeen. The ſands appear to be the effect of a very ancient inundation. Moſt of the hills of ſand are ſteep, and increaſe in height from S. E. to N. W.; while the rivers deſcend from the N. W. to the S. E., towards the ſea, which probably has formed the hills and rivers. Add to this obſervation, that there is ſeldom found in the vallies a pure ſand without a mixture of argil. The latter no doubt muſt belong to the nature of the ſoil; they former may have been caſt there by the ſea.

The woods of Medelpad, eſpecially thoſe through which the road lies, are nearly all cut or burnt. Few firs are ſeen, but many ſmall pines and other ſhrubs. The country of this province reſembles that of Helſingheland; with this difference that we meet with more incloſed fields, and a richer ſoil. Does this advantage ariſe from the monntains with which the country is ſurrounded? We know that vallies and plains are enriched at the expence of the mountains, which are thinned by the torrents. Is not this land indebted for its abundant moiſture to the number of lakes which water it? The paſturages are more fertile; the fields more multiplied, remain unemployed for a longer time; the flocks are not led there, nor is there is ſo much flax ſown as in Helſingheland.

The men at Medelpad are large and athletic, more able, lively, adroit, and more addicted to commerce than in that province. The cattle are larger, give more milk, aſſume a whitiſh colour which gradually augments, ſo that there are very few at Aſehle, which are not white. Is this a quality of the ſame ſpecies of cattle? Is it owing to the climate, to the nature of the paſture lands? Or have the peaſants choſen in preference, white animals?

animals? The climate is one of the ſtrongeſt reaſons. It has a ſingular influence on colour.

In the middle of the river *Indahl*, by the place we paſſed, is ſeen a very beautiful iſland, which has on each ſide a bridge, formed of flat boats: beyond and below this iſle the river appears to be a thouſand fathoms in width; it is rapid; it ſprings from the lake *Storſion*, or great lake, and receives in its courſe nine ſmall rivers, which deſcend from the mountain. Beyond this iſle are many water-falls: a mile below it runs into the ſea on the eaſt, which ſupplies it with ſalmon.

The province of Medelpad is ſeparated by a ſmall rivulet from Angherman. On entering this latter Hernoſand preſents itſelf, ſituated in an iſland ſurrounded by the ſea, and joining the continent by a bridge thirty fathoms in length. This town, burnt by the Ruſſians in 1719, like all thoſe of Nordland, is compoſed of wooden houſes and narrow ſtreets. The ſouth ſide is built on the declivity of a hill, extending to the ſea: on this ſide it only receives lighters and large barks; but on the northern ſide the largeſt veſſels may anchor, and load before the magazines. There are few inhabitants. Bodies of trades are uſeleſs here, for want of capital; and the college is of no benefit, in the want of occupations more eſſential than ſtudy. The women ſpin, warp, and manufacture cloth; though they ſucceed indifferently, it is one of their principal reſources.

Nearly all the men fiſh during the ſummer: they ſalt all the fiſh they take, or ſell them freſh to the peaſants, who ſalt them for their uſe. When the birds of the ſea collect together, it is a ſignal for the fiſhermen that the fiſh are not far off: the ſea is immediately covered with boats and nets. Every ſociety would have laws relative to its kind of life and property. The fiſhermen of Hernoſand have a maritime code, according to which they are judged, by a particular council. All the inhabitants of Hernoſand, excepting five or ſix, live on the product of their fiſhery or lands.

The lands are divided between all the citizens; they burn them, and ſow them with rye: they have paſture lands, which they hire of each other on occaſion, at a price varying with the abundance or ſcarcity of forage. Near a ſoil which they have obſerved to be fit for the bearing of flax, they have built in the town itſelf a manufacture of linen cloth. This eſtabliſhment will become conſiderable, if we may judge from the ſituation of the town, the character of its inhabitants, and the nature of the ſoil.

The commerce of this country conſiſts particularly in flax: it has beſides, like the other diſtricts of Nordland, a reſource in the traffic of game, which it ſends to Stockholm, during the whole of the winter. In Hernoſand there are factors who travel in the ſummer to certain parts of Lapland, to buy, or exchange for brandy, all merchandiſe ſuitable to that town: theſe merchants travel farther than fifteen miles. They would render greater ſervice to commerce and the ſtate, if they employed themſelves in tanning of hides, and preparing the ſkins of the beavers, they procure from Angherman-land and Lapland: they would add or ſubſtitute the profit of the manufacturer to that of the dealer: the returns of their capital would augment in their hands.

The town of Hernoſand is paved with a ſpecies of flint, which might be uſed as whetſtone; but it is ſo common, that the commerce would not compenſate for the expences. The mineral waters of the environs, very rich in oker, form a more lucrative object. Hernoſand has the advantage of being the reſidence of the ſuperintendant of all Nordland, which is the moſt extenſive and perhaps the beſt government in Sweden. But there exiſts an abuſe common enough in that kingdom, which is, that the ſuperintendant poſſeſſes the prebends deſtined for the lecturers of the colleges, who never enjoy them; thus the patron becomes the incumbent: nevertheleſs, Hernoſand without a college would

would merely be a village. Indigence often reigns there, from the ſcarcity of corn, and the ſmallneſs of the product of the fiſhery: there are ſucceſſive years in which the earth and the ſea are equally ſordid. The inhabitants of Hernoſand might remedy theſe defects by the reſource of labour, if it were ſufficient to be miſerable, in order to become induſtrious; but they would have occaſion for advances and encouragement. Perhaps the rich part of the community gains more by the poverty of the people than by their proſperity: at leaſt it is a political maxim, ſufficiently ſpread over Europe, to prefer the opulence of a ſmall number to the eaſy circumſtances of the people at large; and to divide ſociety unequally into two claſſes, of which the one labours, and the other enjoys.

The commerce carried on by Nordland in dried and ſmoked meats is one of the moſt oppoſite to the proſperity of that country, however advantageous it may be to the citizens and peaſants of northern Angherman. The butter and cheeſe are excellent in that country, and they have the cruelty to kill, in order to make ſalt meats, many ſhegoats and cows, which afford good milk; but like the boy in the fable, they would have all the golden eggs of the hen at once. If the labour and induſtry were directed by wiſe views; if the adminiſtrators of the ſtates had immediately for end the public utility, and only employed as the means the wealth of individuals, the happineſs of all the citizens would be the reſult of their operations.

We left part of our equpiage at Hernoſand, and we embarked on a large gulf near that town. We afterwards aſcended the river of Anghermanna for eight miles and a half, N. W.; at its mouth it is nearly a league in width: large veſſels can only navigate to the inn of Hanmar, where the merchants and manufacturers have eſtabliſhed a depot for the iron, planks, and other materials diſtributed among the manufactories of this country. Beyond this magazine, which is five miles from Hernoſand, flat-bottomed boats are uſed.

The fields and paſture-lands bordering Anghermanie are, for the moſt part, well ſituated, handſome and fertile, to the pariſh of Solett, where the land conſiſts of a rich and fine argil: here we meet the firſt cataract of the river. This river might eaſily be rendered navigable for a much greater diſtance, by conſtructing a ſluice, which would ſerve to raiſe the flat-bottomed boats to the level of the water-fall; but as this is followed by ſeveral others, only ſeparated by ſhort intervals, the number of ſluices which would be required for the navigation of the river would incur great expences.

Near the fall of Solett, on the weſtern ſhore of the Anghermanna, is found a low land, where it ſeldom freezes, while the elevated places are conſtantly frozen. Much farther to the ſouth the heights are not ſubject to froſt, and the low parts are commonly expoſed. It may be preſumed, from this ſingularity, that the nature of the ſoil contributes as much as its ſituation, to the effect of the influence of the ſeaſons.

Half a mile to the north of Solett, the Anghermanna receives the river of Adale, which riſes in the mountains, and iſſues by the Rock of Swans, near *Kitſchewari*. In the pariſhes of Solett and *Botea*, a third part of the lands is every year left unemployed: the other two thirds are ſown, half with autumnal grain, half with that of ſpring; ſometimes they ſow them only with the latter. The ſoil is rich and fertile; but without doubt cold, ſince the inhabitants warm the water they give their cattle to drink.

The country of the environs of Solett, which borders the river, is called Adal; the appearance is very pleaſing: the ſhores are crowned with hills of a tolerable height, the declivity of which is inſenſible. Theſe hillocks are argillaceous, and owe partly to art the agreeableneſs of their proſpect, interſected with fields and meadows. The ſhores of the

the Anghermanna are equally ſpread with ſtrait and high hills, forming vallies nearly as deep as the bed of the river.

It ſhores are alſo adorned and enlivened with ſmitheries, founderies, and ſaw-mills: but theſe machines are not turned by its waters; its ſwells are too ſtrong, and its falls too feeble. Water-falls, of a ſurpriſing height, formed by the torrents which deſcend from the woods of Anghermanna, are the ſoul of the mechaniſm of the forges and mills.

The undertakers of the manufactures of this diſtrict derive their ore from Utoo, and the unwrought iron from other founderies: the expence occaſioned by the tranſport of theſe materials, makes it deſirable to find in the vicinity of the forges the iron ore which they work into bars. When the material is in the neighbourhood of the place where it is manufactured, the work becomes leſs expenſive. Abundance of proviſions alone can maintain the balance between the undertakers of manufactures, and the merchants who ſell them the materials.

From the mouth of the Anghermanna to the heights of *Liens*, we meet with ſalmon fiſheries, which afford ſubſiſtence to the fiſherman, and duty to the government; but often neither yield the expences, nor the reward of the labour.

From the pariſh of Solett, proceeding to Liens, we purſued on horſeback the courſe nearly taken by the river, to the N. W.; but it makes a great many windings: both its ſhores are bordered with hills of ſand, covering a rich and fertile land, which nature ſeems to have been willing to preſerve from the overflowings, or rather which is concealed under the heaps of rubbiſh brought even by the inundations; ſince the waters which in their ſource ſometimes waſh away the mountains, in ſtripping them ſometimes in their courſe raiſe hills of ſand.

However it be concerning the formation of theſe ſands, and the rich lands underneath, the country we traverſe on leaving Solett is entirely compoſed of mountains and rocks: yet we perceive ſome good lands before arriving at Liens; but the ſoil of this pariſh is ſtony and barren, intermingled with marſhes which might be fertiliſed. The little river which waters it, and ſupplies it with ſalmon, is divided by a large rock, or rather an iſland, forming a water-fall little conſiderable: the rock from which it is precipitated is ſcarcely ſix fathoms in height.

The land of this diſtrict is mixed with ſand; it requires a third part of the fields to be left unemployed every year to enrich it. No hedges are ſeen; the fallow ground is not even divided from the paſture land, becauſe the cattle remain in the folds till the hay harveſt.

The farther we penetrate into this country, the more do we meet with beautiful woods, eſpecially beyond *Reſilla*. The ſaw-mills have conſumed the greater part of the woods on this ſide, not only on the banks of the river, but as far in the land as the peaſants have had conveniency to export the wood. Every hamlet extends its territory to one or two miles on both ſides of the Anghermanna: moſt of theſe hamlets are built on the banks of this river: the cold even compels men to live near it; for it always freezes the corn in the dry lands which do not receive any influence from the running waters. It is the ſame of the vicinity of great rivers, as of the influence of courts, of which there is conſtant complaint, and yet they are always approached. It is an injuſtice, or at leaſt a folly, of courtiers to complain of the diſgraces which they ſhould have foreſeen, by facing them; which they purchaſe before-hand, by the value they ſet on the ſhorteſt favour; and which they conſtantly deſerve, were it only by the good offices they render themſelves, by corrupting or pilfering their maſter. But it is an ingratitude in people who dwell on the banks of rivers, when they complain of inundations:

A large river overflown ravages, it is true, cultivated fields; ſometimes carries away hamlets with their inhabitants and flocks; deſtroys the proviſions of one year, the crops of another, and the reſources of ſeveral. But this river has produced during ages an immenſe population, by the fertility of its banks, by navigation and commerce; it has given water to the cattle who manure the land, and afford food to man; it has ſupplied the inhabitants of its ſhores with fiſh: if it had not fed the regions which it traverſes, we ſhould not behold them covered with fields, towns, rich and populous cities. Happy therefore are the ſtates which are watered by great rivers, if the inhabitants know how to take advantage of the benefits they offer, and provide againſt the diſaſters they may occaſion! Egypt has ſubdued the Nile: the Po, the Rhone, the Loire, and Garonne, are they more formidable? Every where do the waters require the aſſiſtance of art, either to become uſeful, or to prevent their being prejudicial to mankind.

It ſeems even as if Nordland ſhould rather expect its ſubſiſtence from the waters than the land: it ſcarcely poſſeſſes any other ſoil fit for cultivation than thoſe which are marſhy. Near Reſilla is ſeen a hill covered with buſhes, which are only fit for burning; it is the moſt elevated part of the environs: the ſoil is good, but uncultivated, becauſe it is overſpread with ſtreams, which render it miry. Nearly in all Nordland, each peaſant poſſeſſes a ſmall water-mill, the wheels of which are horizontal. Water even which refuſes to the culture of lands, lends at leaſt its aſſiſtance to the labour of man.

Between Liens and Iunſila the lands, nearly all ſtony, are covered with moſs and wood: they could procure timber, if they had the means of conveying it. A merchant of Hernoſand has attempted to procure ſome: during the winter he had ſome cut and carried to the river ſide; then about the middle of ſummer, at the greateſt ſwells of the waters, he had his wood thrown into it in pieces: the river has brought ſeveral of them to the place he wiſhed; but many others have been ſtopped by the ſinuoſities of the river: perhaps another ſwell will bring the remainder of his cargo of wood. This method of conveyance would be uſeful to navigation; for in thoſe woods there are found trees which appear very fit for maſts: it is true that they are in general injured by the inclemency of the ſeaſons; many are frozen, beat down by the wind, or at leaſt broken; the greater part is cracked.

The cold which is injurious to the trees, is yet more fatal to the corn. The inhabitants of all the country to the north of Reſilla are unable to derive from the land either any thing for ſuſtenance or to pay duty: the nights there are ſo cold, when the corn ripens, that it is often frozen and irrecoverably loſt. The pariſhes of Liens and Junſila have few hamlets which are not expoſed to this calamity. The greater part therefore of the inhabitants of this diſtrict, and the pariſh of Aſehle, give themſelves up to the care of their cattle, in which conſiſt all their riches; that is, which afford ſubſiſtence to the culivator, and duty to the ſtate.

From Iunſila to the village of Hellan, in the pariſh of Aſehle, we traverſed for four miles marſhes, woods, and mountains: we followed for ſome time by water the windings of the river, in the places where there were no falls.

Thoſe kinds of channels where the calm of the waters is not interrupted by any fall, are called in the Nordland language *Sehles*. *Stark* is a name given to the intervals of water where the current is ſtronger, but not ſufficiently rapid, to prevent the paſſage of veſſels: thoſe where the waters, without falling, run with ſufficient rapidity to carry away every thing, are called *Forſs*: laſtly, they give the name of *Fall* to thoſe where the waters are precipitated, from whatever height they fall. This is a land as much neglected by nature, and diſregarded by man, as that of which the unequal declivity occaſions ſo irre-

gular a courſe to the waters, ſo little navigable. How ſhould a country be inhabited which preſents ſo many difficulties to the traveller?

We travelled about four miles, over ſix of theſe ſehles, where the water ſeems to repoſe: the firſt was that of Iunſila. Hence we travelled half a mile by land to the ſehle of *Ial*, upon which we navigated a quarter of a mile. Afterwards, having travelled three quarters of a mile by land, we travelled a fourth by water on the ſehle of *Korting*; then one and a half by land, and three quarters of a mile on the ſehle of *Gouble*. A ſmall iſland which we meet in the middle of this laſt ſehle, ſeparates Anghermanland from Weſtern-bothnia.

We again travelled by land ſeven-eighths of a mile, then a quarter of a mile on the ſehle of *Alfwets*; afterwards half a mile by land; laſtly, we navigated on the ſehle of *Hellan*, to the village of that name. We arrived there in the evening, very much fatigued, by a route of about twelve leagues, in which we were obliged to embark and diſembark ſix times in the ſpace of twenty-two hours, paſſed in the open air, during a continual rain; for no houſe is met with in the whole of this road, interſected with deep marſhes, high mountains, and extenſive countries of gravel and ſand. Hellan is two miles and a half from the church of Aſehle, where we went the next day, as much by foot as by water. The courſe on theſe routes is directed as at ſea, by the compaſs and map; not that the waters vary as much as the winds, but their direction is oblique and ſinuous. The terms north-eaſt and by north, north and by eaſt, ſhould be as familiar and as frequent in a journey in Nordland, as they are in the journal of a navigator.

Though the province of Aſehle be in Lapland, there are no Lapland inhabitants in its ſouthern part: ſome peaſants have formed in theſe deſarts colonies, which they call *Nybygghes*.

They reckon twenty-five; the pariſh of Aſehle contains a part of them: *Hellen* and *Gaffehle* are the moſt ancient: they have been eſtabliſhed nearly fifty years; the others are recent.

The firſt traces up even to the reign of Charles XI. This great monarch, by an ordinance of the twenty-third of September, 1673, exempted from the militia, the lodgement of troops, and the poll-tax, all thoſe who would ſettle in the province of Aſehle; and theſe privileges were confirmed by the ſtates of the kingdom, at the diet of 1720. Each colony only pays, like the Lapland diſtricts, a fixed ſum, which never varies with the wealth of the contributors. The richeſt peaſant only pays twenty-one crowns of copper, which amounts to twenty-five livres and four ſous of France; but the greater part only pay three crowns of copper, or three livres and twelve ſous. For this price they may poſſeſs a land of about twelve miles, or four leagues, in circuit; and often even any quantity of land they chooſe. The land indeed is ſo barren and poor in theſe countries, that it need not be meaſured. The exemption from ſervice, and the ſmallneſs of the taxes, are the leaſt encouragements which may induce men to come and cultivate theſe barren and frozen mounts.

The inhabitants of Aſchle are large, laborious, active, able in their kind of commerce, and hoſpitable to ſtrangers: their houſes are tolerably well built, very ſimilar to thoſe of Nordland, except that their walls are not of ſtone or lime. The province neither affords that material, nor the kind of argil which might be ſubſtituted: in two places only is found a very fine argil, of which they make bricks, which ſerve for building. Theſe people are very comfortable, notwithſtanding their little wealth, which conſiſts in their cattle and nets; but this latter reſource ſeldom diſappoints their hopes. The river of Anghermanna, which traverſes the province, and all the ſmall lakes by which

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the land is interſected, furniſh a ſufficient quantity of fiſh to feed the inhabitants, and to ſell to ſtrangers.

A rich colony may poſſeſs twelve or fifteen cows, with their calves, ſheep, a horſe, and goats. The hay of this province is ſo nouriſhing, that the cows yield an abundance of milk three times a day. Each cow affords two pounds of butter, as good as that of Helſinghéland, which is the beſt that is eaten in Sweden, and perhaps it is ſuperior to that of Holland.

This butter is an object of commerce, and conſtitutes with cheeſe, dried fiſh, birds, and ſome furs, all the wealth of the country. Theſe proviſions ſerve to procure in exchange corn, ſalt, tobacco, and other objects of conſumption.

The peaſants are not much of cultivators: the whole ſowing of the year only amounts to three caſks of barley and rye. The men and women till the lands, and gather in the crops in all Nordland. Their ſcythes equally ſerve to cut the hay and corn. They mow the graſs very ſhort and cloſe to the ground; but this labour is ſlow, and they loſe in time what they gain in hay. When they employ this ſcythe to cut the corn, they fix a bow to it, which ſerves to collect the ears together, and to ſpread them as they mow. But a ſingle night has often cropped the whole; and when the coloniſt riſes in the morning he finds the graſs withered, the corn-ears blemiſhed, his labour loſt, and his hopes deſtroyed by the froſt, in the middle of ſummer.

It is difficult to determine the cauſe of theſe accidents. The high latitude, and the neighbourhood of the frozen zone, do not alone produce this extraordinary cold. The Alps and the mountains of Sweden, though much nearer the tropic, have ſnow all the year. Holland, though farther north than Swiſſerland, is yet leſs cold. Even in Nordland there are found, in the midſt of the mountains, two pariſhes, called *Nordlian* and *Sudlian*, in which rye and barley are ſown, which never freeze. In certain diſtricts a field is frozen by the eaſt wind, while that wind does not produce the ſame effect elſewhere: another field freezes with a weſt wind, which does not affect the ſurrounding fields; another freezes by the ſouth wind; another, in fine, by the north wind. Theſe ſudden and unforeſeen froſts happen from the end of July to the beginning of Auguſt, the hotteſt part of the year. The cold nights of the ſummer are accompanied with ice, which ſoon melts, becauſe the ſun only quits the horizon for a ſhot time, and does not delay to warm it.

Among the reaſons aſſigned for theſe pernicious phenomena, the peaſants, who complain of them, attribute them to the fogs which ariſe from the marſhes with which the fields are ſurrounded. As theſe vapours are not attracted by the courſe of any water, they fall again about the marſhes which have exhaled them; but this cauſe, which may augment the cold, does not produce it. Near Solett is obſerved a field which often freezes; while the neighbouring fields, which are ſurrounded with marſhes, do not experience the ſame misfortune. The corn of Hellan is never frozen, though the lands there are full of marſhes. That of Gaffele and Nore are often frozen, though near to a river, which may attract in its courſe the fogs of the marſhes through which it traverſes.

The fog ariſing from rivers and rivulets generally ſecures the corn from froſt. They do not experience this diſaſter during the cloudy nights; yet we ſometimes ſee a field ſituated on the bank of a river freeze ſooner than another. Theſe froſts might be attributed to the north wind, if in certain diſtricts, the other winds were not more formidable. It may perhaps be ſaid that theſe fields being ſowed every year, the moiſture is ſoon exhauſted from a ſoil naturally barren, and they cannot give ſufficient ſtrength to the corn to reſiſt the froſt; but the quantity of cattle which the country feeds furniſhes ſufficient dung to manure the fields every other year. Though the lands for the moſt part are formed of a bed of ſand, by the means of a thin bed of dung which is ſpread from

time to time, they afford ſufficient nouriſhment to the corn: I have ſeen it extremely fine, and adorned with very large leaves.

Thus, in order to diſcover the ſecret cauſe of theſe froſts, the Baron de Cederhielm and myſelf propoſed to M. Elie, inſpector of the fiſhery of pearls, to make continued obſervations for ſeveral years, in different places, on the times and circumſtances of this deſtructive phenomenon, which muſt certainly be the effect of a concurrence and complication of cauſes: we adviſed him to obſerve the poſition of the fields, the nature of the ſoil, the ſtate of the weather preceding theſe unforeſeen froſts, and the wind with which they were accompanied.

While waiting till the ſource of the evil may be diſcovered, in order to find a remedy, I am of opinion that it may ariſe from the vapour of the acid waters which are in the earth. When this vapour riſes in fogs, it diſſipates and occaſions no injury; but when it cannot exhale with ſufficient ſtrength, it is attracted by the corn, ſtops there, and blights it in a ſingle night.

Near Hellan, where the corn is ſeldom frozen, the bottom of the ſoil is of rock, rarely covered with three feet of ſand: the moiſture of this ſand is evaporated during the middle of ſummer; but elſewhere the ſand is deep, and without rich land to bind it.

Near Gaffele, and particularly Nore, the marſhes are more elevated than the fields; hence the waters, which are corrupted there, flow from the former to the latter before they evaporate.

In fine, the fields near the mountains, from which the ſnow-water deſcends, and inſenſibly filters through the ſands, are more ſubject to froſt than the others.

Perhaps the ſcarcity occaſioned by this calamity alſo depends on the quality of the grain: they only ſow barley at Aſehle on a tract of land from eight to nine miles in length. Would it not be preferable to ſow rye? This is what a ſkilful economiſt ſhould attempt: not to mention the advantage ariſing from a corn which makes the beſt bread, and which keeps better, rye yields more than barley, and eſpecially reſiſts the cold better; it is ſowed in autumn; it has time to ſhoot ſtrong roots during the winter; a moderate degree of heat is ſufficient in the ſummer: this corn ripens early, before the return of the froſts of the month of Auguſt. At leaſt a trial ſhould be made, by ſowing rye and barley; one crop might ſupply the failure of the other.

For want of theſe precautions the frequent ſcarcity experienced by Aſehle renders the corn very dear. When we paſſed through it, a caſk of barley ſold for nearly forty Swediſh crowns. On account of this dearneſs the inhabitants cannot always eat it: they therefore have recourſe to their bark of the fir, dried and moulded; and not to loſe the habit, they mix it with barley flour, even in abundant years. Were they to change ſuddenly from a healthy and light food to the uſe of this bark, their digeſtion would be injured, and ſcarcity would occaſion plagues and epidemical diſorders. Art and precaution are neceſſary to the poor inhabitants of the north, in order to accommodate themſelves to the wretched food of their climate; as they are to the rich nations of the ſouth to accuſtom themſelves to the uſe of the ſpices and the delicious beverages of Aſia and America. But while the tables of our voluptuaries are overloaded with the ſuperfluities of a foreign world, whole nations have not even one of the neceſſaries which we refuſe. The Laplanders and Nordlanders might feed on radiſhes and potatoes; they could make a bread of them much ſuperior in flavour and digeſtion to that of bark; theſe roots would thrive in the ſands. The miniſter Forſberg has produced ſome radiſhes with ſucceſs.

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The tree from which they take this rind, which affords food to man, is very common and ancient, particularly in the north. The fir reigns in the ſands and cold countries, like the cedar on mount Lebanon. Nordland exhibits ſome of very great age. At the diſtance of a quarter of a mile from the church of Aſehle, to the S. W., we cut a fir, and we counted the concentric circles of which the trunk was compoſed, in order to determine the difference between the growth of the ſide of the tree towards the north, and that of the ſide towards the ſouth. We found that the bulk of this fir, which was of three thouſand circles, and conſequently of three hundred years, had been formed nearly in the following manner: From the centre we counted, for the firſt half century, five hundred and ſeventy-two parts to the ſouth, and five hundred and nine to the north; for the ſecond half century, three hundred and ſixty-eight parts to the ſouth, and three hundred and twenty-ſeven to the north; for the ſecond century, ſix hundred and eighty-five parts to the ſouth, ſix hundred and nine to the north; laſtly, for the third century, five hundred and ſeven parts to the ſouth, and four hundred and fifty to the north. The whole diameter of the trunk of a tree three hundred years old, therefore, contained four thouſand and twenty-ſeven parts of our geometrical ſcale; that is, twenty geometrical inches, and nearly an eighth. The ſoil of this tree was ſandy, and covered with moſs, as is the whole of the province of Aſehle.

The inhabitants of Aſehle are troubled during the ſummer by a ſpecies of fly, which they call *Knort:* they are ſmall inſects of a fœtid ſmell, which ſeem to form a ſpecies, or a middle claſs, between the fly and gnat: they have black and yellow ſtripes on the back and legs. They are ſo numerous, and eſpecially in hot weather, and under a ſerene ſky, that the inhabitants are obliged to protect themſelves by a kind of pomatum, a mixture of fat and tar, with which they ſmear the face; but the odour is not leſs inſupportable to men who are not accuſtomed to it, than to the flies, who always remove from it. The inhabitants alſo preſerve themſelves from theſe inſects in their houſes, by burning every night pieces of a knotty tree, the ſmoke of which kills them.

The laſt church we meet to the north of Aſehle is of wood, very badly conſtructed, and more reſembling a barn for beaſts than a fold for a chriſtian flock. It was erected under the reign of Chriſtina, for the converſion of the Laplanders, and coſt ſix thouſand crowns of copper. I can affirm that the architect, whoever he was, could not have loſt by the undertaking of this edifice.

The province of Aſehle is ſo extenſive, and the Laplanders are ſo far removed from the church, that divine ſervice is only performed once in fifteen days. All the inhabitants aſſemble together from the Saturday in the evening until the evening of the next day; the Laplanders keep in the huts they have raiſed about the church, the coloniſts in the houſes they have built there. The mountain Laplanders only repair there on great feſtival-days; yet they are attracted by ſome human intereſt, which is always united with motives of piety. At Chriſtmas a fair is held near the church: at this time the taxes are paid, and law-ſuits determined. Commerce, juſtice, and religion, are in ſome meaſure united, to bind men together, and preſerve them in peace, under the yoke of ſociety. But the Laplanders who frequent the church during the fair, are the moſt attracted by the charms of drinking ſtrong liquors, and giving themſelves up to groſs intemperance.

Near this church is a ſchool, where the government pays, lodges, and feeds a maſter, with ſix children, who are taught to read, and inſtructed in religion. The maſter, whom we ſaw, told us he would accuſtom his pupils to eat bread and wear cloth: he is perſuaded that this habit, ſtrengthened by time, will familiarize the nation with the Swedes, with whom they will ſeek commerce; and this is the only method to civilize the

the Laplanders, and to diveſt them of their idolatrous practices. The miniſter Forſberg, who formerly held this ſchool, is of the ſame opinion, which appears to have greater foundation, ſince to the preſent time the converſion of the Laplanders has only been a ſcene of fraud and hypocriſy. Infatuated with the cuſtoms and opinions of their anceſtors, they regard our ceremonies with the ſame eye that we behold their ſuperſtitions. They ſee no other difference between their idolatry and chriſtianity, than the protection afforded to the goſpel by the government. It may juſtly be concluded from their manner of life, their averſion to the Swedes and eſpecially to the miniſters, from the fear they teſtify at ſpeaking of religion, from the habit which they have of agreeing with their ſuperiors on the truths of chriſtianity, ſtill ſuſpending their offerings to the ſacred trees, from the ſecrecy they all preſerve, when they commit actions forbidden among chriſtians. It will coſt a great deal of trouble to make them renounce their drums of divination. They have innumerable places to conceal them in their woods and deſerts, eternal aſylums of ſuperſtition. The miniſter Forſberg broke one of theſe inſtruments of their pretended magic, but they ſoon made others at little expence. It is not the drums which muſt be broken, nor the books which muſt be burnt; but it is the human mind which muſt be inſenſibly freed from its errors, by reaſon, and eſpecially by the mild laws of a government, beneficial to the nation which finds itſelf ſubdued. When the people are happy, they do not diſturb themſelves with idle diſcuſſions of tenets, they do not become fanatics for their opinions. It is the cruel infatuation of forcing them to admit that which they cannot perſuade, of impoſing ſilence by puniſhment; it is perſecution, in a word, which firſt creates enthuſiaſts, then martyrs, then ſects, then rebels, and finally civil wars.

The Laplanders are ſurpriſed when we would forbid their drums, which ſerve them, they ſay, to direct the winds; while the Swedes have compaſſes to direct their courſe, and mark the progreſs of time.

Notwithſtanding, the Laplanders do not entirely rely on their juggling. They are attracted to the religious feſtivals by the fairs. Among other merchandiſe, they bring ſkins and furs. In exchange for this clothing furniſhed by nature, they take that which art has manufactured, ſuch as woollen cloths or ſtuffs. For meats and dried fiſh they procure tobacco and pipes, ſalt and pepper. For cords drawn from the roots of trees, they receive hemp of which they make nets. They ſell baſkets, and buy kettles, knives, ſometimes hatchets, more rarely planes or augers. They prefer before all theſe tools brandy or port wine, which they find excellent when mixed with that ſtrong liquor. The Laplanders are unwilling to be paid in copper money, though it is current in the traffic between the Swedes who come from Oumea, and the coloniſts of Aſehle: but they accept, and even ſeek the ſilver money. Such is their clowniſhneſs, that they have no confidence in a ſuppoſed value, which only has the ſtamp of the prince for guarantee.

At our departure from Aſehle, we took ſome Laplanders as guides, for we had to aſcend the river Anghermanna, with its falls. We met with ſome of great height, which obliged us to convey our boats and crews by land. Sometimes we were compelled to walk two or three miles, to relieve thoſe who rowed, dragged, or forced the boats againſt the current. The Laplanders reckon the way by journies, and the Nordlanders by miles. From the church of Aſehle to the mountains to which we went, the diſtance is nearly ſeven miles. During this route, the magnetic needle pointed to the N., N. E., and N. W.; but the moſt part of the time to the N. N. E. The river makes a great many windings.

It was about ſix in the morning, when we arrived at Wolkſio. At midnight a thick fog aroſe, which began to diſſipate about four in the morning, and was completely diſperſed,

perſed, by the time we had paſſed the *Forſſe*, or current of Wolkſio. We then beheld, on the lake of that name, a kind of rain-bow, a thouſand paces from us. The air was calm and ſerene, the ſun brilliant; and the waters ſo clear, that we could diſtinctly ſee the gravel, flints, coarſe and fine ſand, of a brown and grey colour, at the depth of two fathoms.

At a mile from Wolkſio, is ſeen a mountain ſeparated from the others. It is a ſingularity like the phenomenon of the rain-bow, ſeen on the lake in ſerene weather. We croſſed this lake at the width of a quarter of a league, and after travelling for about a mile and a half, we arrived at *Telt-Sio-Arne*. From the pariſh of Aſehle, to this laſt place, there are eighteen currents, falls, or ſheets of water to croſs, in aſcending the Anghermanna. This river riſes in the mountains of *Koultſioſiall* and *Biorkſiall*. It receives the river of Marsfiall, and many ſmall lakes and rivulets; it even traverſes the lakes of Malgomai and Wolkſio. It is ſo increaſed by the tribute of all theſe waters, that in many places it is from a quarter of a mile to a league in width. It then glides ſlowly and forms by its dormant waters, what are called *Sehles*. But in proportion as it grows narrower, it daſhes over the obſtacles it meets, and falls with ſo violent a noiſe, that in calm weather it may be heard at the diſtance of two miles. What a country is this; merely a deſert where are only beheld mountains without cultivation, without any trace of human induſtry, nor ſcarcely of life and ſenſation; where even in the ſeaſon of life, when nature revives, no noiſe is heard but that of cataracts, which roaring from afar behind hideous rocks, ſeen to environ the traveller whom they threaten, ſometimes to approach him, ſometimes to follow him! Miſerable indeed if he were alone; all the horrors of a deluge, all the images of the Styx, with its nine great windings, would aſſail his trembling ſoul. Then would he experience thoſe involuntary terrors which gave birth to the ſpectres of ſuperſtition, and as if fantaſtic beings were neceſſary, to aſſiſt him to ſtruggle againſt nature. Man alone, ſurrounded by danger and objects of terror beholds the face of nature in a different view. Every thing then becomes a demon, every thing a deity. He invokes the ſtone againſt the roaring torrent; as he approaches the ſource of his fears, they multiply; his mind is diſturbed, his knees totter, his eyes roll, all his ſenſes are diſordered; and if he diſcover not the cauſe of his fear, his reaſon for ever ſinks into unfathomable obſcurity, into everlaſting night.

I have ſeen the peaſants of Aſehle aſcend this river with their boats; when they approached a rock, land and draw theſe light ſkiffs againſt the current, with all the courage and adroitneſs which ariſe from a long habitude. But they are not equal to the Laplanders in this laborious and difficult art.

The Laplanders have boats, the keel of which one fathom long at bottom, extends to two fathoms upwards. It is large, flat, and equally pointed at both ends. The ribs are very narrow. There are three or four of a tolerable length on each ſide; they are covered or doubled with fir planks, which have been cut with the hatchet. Theſe planks two lines thick, are joined with the ſinews of the rein-deer, or faſtened with ropes from the root of the fir. It will be ſeen by this deſcription how brittle theſe little boats are; a man might break them with his hand: if he placed his foot on the ſides of the boat, on entering, the timber would crack. A boat only contains the rower ſeated at one end, and the paſſenger at the other, to keep it in equilibrium. A bowl of the bark of the birch-tree, to bale out the water which enters at the joints, cracks, and even the pores of the wood; two oars, and a hatchet form the whole cargo of the little boat.

But if the boat can only carry two men, one man is ſufficient to carry the boat. When a Laplander meets with a water fall, which he cannot paſs by means of his oars; as he does not even poſſeſs any idea of ſails, he puts the bowl of his little boat on his head, paſſes the oars into two wickers ſtrongly faſtened to the ſides of the boat, takes his ſack of proviſions on his back, and places the boat above the bowl; then by means of the hatchet which he fixes to the ſtern, he preſerves his boat in equilibruim, and guides it to the right and left through the trees. When he has paſſed on land above the level of the fall, he replaces his boat in the water and continues to row.

However frightful to the eye, be the rapidity of one of theſe little boats deſcending a fall between the rocks; the great calmneſs of the Laplanders amidſt theſe perils, induced us to attempt theſe paſſages with them, and when we had overcome ſeveral, we no longer wiſhed to land, as we did, before we had been inured to theſe dangerous ways.

The lands watered by the Anghermanna, are more or leſs fertile, according to their diſtance or proximity with reſpect to the river. But, as it overflows it ſhores every year, at the return of ſpring; it is difficult to ſay whether it is more uſeful to them by its waters, than hurtful by the ſands with which it covers them. Yet, it may be affirmed that this river is to the country of Aſehle, what the Nile is to Egypt. Its inundations which cover the fields from the month of May, when the ſun begins to melt the ſnow of the north, to the month of July, preſerve the plants and corn from thoſe backward froſts, which ſurpriſe the crops in the flower, and deſtroy the harveſt before it has arrived at maturity. In like manner, the Nile by its periodical inundations, ſecures the plains of Egypt from the ardor of the ſun, which would dry up the fruits and cultures of that rich country. But this compariſon ſtill admits of as much difference between the objects compared, as nature has made in diſtance between the tropic and polar circle. Beſides, in Egypt, art with all its inventions, aſſiſts the fertility of a prodigal land. In the northern countries, induſtry is as limited, as nature is ſordid.

It might perhaps be imagined that in the immenſe foreſts which overſpread Lapland, there muſt be found trees proper for the making of maſts; but it would be in vain to ſeek for them. Nearly the whole of theſe woods has been deſtroyed by fires, which have been falſely attributed to thunder, but which only aroſe from the imprudence of the Laplanders. When they quit an habitation, they often leave fire through inattention. Sometimes, if they want to warm themſelves, they ſet fire to a tree, to avoid the trouble of cutting it down. Laſtly they ſet fire to a foreſt, leſt the Swedes ſhould ſeek for mines in the neighbourhood, and diſtreſs the inhabitants in order to procure iron and copper.

The lake of Wolkſio, to the north receives a great river which derives its name from the lake Hwoima, whence it proceeds to the diſtance of ſix or ſeven miles, and after great windings diſcharges itſelf into a more ſouthern lake. It would appear that lakes in theſe countries, are only large reſervoirs which empty themſelves into one another by natural channels, forming as many rivers. Theſe lakes indicate a land, riſing in platforms diſpoſed one above another, in amphitheatres. They reſemble large terraces, where the rain and ſnow form themſelves baſons, the waters of which flow out by water-falls, rivulets, or ponds; according as the declivity of the land is ſometimes ſudden, ſometimes gentle, or interrupted and broken off. The ſoil of the lake of Wolkſio is ſtony and ſandy. Towards the upper extremity of this lake, the fir woods become rare, and thoſe of the pine more numerous; ſo that near the lake Malkomai ſcarcely any firs are ſeen. This was the laſt lake on which we navigated; yet we did

not proceed on it for more than two miles, though it is three and a half in length, with an unequal breadth, varying from a quarter to a whole mile. It ſtretches from the N. E. to the S. W., and empties itſelf into the Aughermanna towards the S. W. The bed of this lake and its fiſhery, are the ſame as all the others.

Arriving there, we perceived at the diſtance of ſix miles on the weſtern ſide, the mountains called Akick-fiall. The heights near the mouth of the lake, are ſufficiently fertile, as is part of the ſurrounding land. But the woods are nearly all burned. We felled the largeſt fir we could find in this place. By the number of circles which appeared from its ſection, it muſt have been a hundred and ſixty-two years old. Its ſemi-diameter contained thirteen hundred and thirty-one parts of the geometrical ſcale, or about ſix inches, three lines and a fourth. The ſoil in which this tree had grown was ſtoney. The pines of theſe environs were of a tolerable height and covered with moſs. In theſe far removed countries from the ſun, nature employes ages to produce little. The inhabitants live to a great age, but what a life! without ever feeling the pleaſures of the ſenſes or the imagination, which yield to the ſoul a lively and ſolid enjoyment; without experiencing that inward and continual action and re-action, which bind men to every thing in nature, by ſenſation, deſire and enterpriſe; without any taſte which may attach a being to himſelf and to thoſe around him. Thus, the manners of theſe people, incloſed by frozen ſeas and mountains of ſnow, poſſeſs not the leaſt of animation, or of vigour. Society there is dull, monotonous, without paſſion, without incitement. The inhabitants like the trees, are almoſt iſolated, though placed by the ſide of each other. Love has no branches; friendſhip no name. They are perfect ſtrangers to ideas of protection, aſſiſtance, compaſſion, beneficence and charity. But ye ſenſeleſs beings, who glory in [illegible]tereſting names, do ye know how much they coſt to human nature; and that thoſe virtues are created at the expence of the vices, crimes and misfortunes of your fellow creatures?

We left the lake Malgomai, and aſcended a ſmall rivulet for half a mile N. W. towards Tetſio, where we landed, and left our barks. We were obliged to perform the remainder of our journey on foot, among the higheſt mountains.

The firſt diſtrict we had to traverſe had been ſet on fire. The ſoil was ſandy and mixed with ſtones. We afterwards entered a wood of very ſmall pines, which extended to the top of the mountain, a mile and a half diſtant. Theſe trees were tolerably freſh; moſt of their branches lay horizontally. They were lower and ſmaller than thoſe of Aſehle.

The fir will not thrive among pines, it is of too elevated a ſtructure. The ſmall number which is ſeen of theſe majeſtic trees, created to defy the winds of the land and ocean, are of a dwarfiſh ſpecies. But we obſerved that the ſmoother and more marſhy the country was, the greater number of birch trees and poplars grew, always ſmall and low, with a many branches and few leaves. The birch trees appeared of two different ſpecies; the one had ſmall leaves, of the ordinary form of this tree; the leaves of the other were larger, thicker, more curled, and being of greater ſubſtance; they formed a medium between the leaves of the birch, and thoſe of the gooſeberry buſh. In theſe marſhy places we alſo ſaw ſome thickets of both the hawthorns, but neither of them having any fruit.

In theſe marſhes there grows a ſhrub called *Myr-riſs;* that is Moor's-ſhrub. The branches are ſtrait, without ſuckers. The wood is ſtrong. Near the root the bark is grey; towards the ſummit it is of the brown of young birch trees. The leaves are arranged three by three, very near the branch, and are roundiſh like thoſe of clover.

The ſoil which produced theſe woods was partly of rock and partly of ſtones, covered with moſs, between which was perceived a fine ſand of a brown colour: the land about the marſhes we met with in theſe woods was alſo a ſand, among which from time to time we perceived a black earth, formed by putrified moſs. This ſoil in ſome places was half a foot thick, in others two feet, and perhaps more; for we were not able to meaſure it every where. The marſhes are covered with a prodigious quantity of flies, which they appear to produce. They are in greater number in theſe mountains than in the pariſh of Aſehle, and of a different form. Their body and feet are yellower: their ſting is ſharper. Their ſtings pierce through the cowls of crape with which the inhabitants in vain cover their faces. They are alſo more venomous, and commonly leave a black ſpot on the ſkin, which becomes a tumor.

At the extremity of the wood, we found a verdant country, the ſoil of which was ſtoney. We ſaw many plants and herbs which were unknown to us; among others, one, the leaves of which reſembled thoſe of the lily of the valley. We alſo ſaw many junipers, but very ſmall, and without kernel, of a very deep brown as if they had been burned.

All theſe obſervations are not wholly uſeleſs, even to the inhabitants of more ſouthern countries. Every where we meet with ſandy and barren ſoils, where grow pines and ſhrubs ſimilar to thoſe which alone nearly cover all Siberia, Lapland, and the moſt northern countries. By eſtimating the quality of the ſoils, and the nature of the productions which are found in ſuch different climates, we might examine if the ſoil contributes ſtill more than the ſun, to the generation of plants; whether the abode of the waters of the ſea, or the internal ſtructure of the earth, do moſt determine the diſpoſition of the beds on its ſurface. The ſands of Africa, thoſe of the heaths of Spain and France, thoſe of the north of Europe and Aſia, are they the ſame with reſpect to grain, colour, thickneſs, mixture, vegeteble ſubſtance? Nature has done nothing in vain; her contemplator ſhould obſerve nothing without reaping benefit.

We at length arrived at the foot of the mountain of Rod-fiall. It occupied us an entire hour to reach its ſummit. From the lake of Malgomai, whence we had perceived it, it ſeemed to ſupport the heavens. Nevertheleſs we found this mountain to be of leſs altitude than any of the ſurrounding.

In Lapland a mountain covered with ſtones is called a *fiall*. The mountains which are wholly of rock, an uncommon circumſtance, have ſo many gaps, that they may be regarded as a pile of rocks. The latter are ſometimes bare, but oftener covered with a little moſs, or earth. The mountain of Rod-fiall is curved towards the north, and forms an arch of a circle about the lake of Rodſio. The ſoil is rich, and overſpread with ſmall birch-trees, oziers, and herbs of every kind.

The ſoil of the hills is a white and fine ſand; beneath is a white argil, having no binding earth. If the fountains which iſſue in great numbers from that mountain, did not hinder the corn in the ſpring from thriving, by the froſts, of which the coolneſs of the running waters augments the cold, this diſtrict might ſupport many inhabitants. It is the beſt we have ſeen in the whole of this country. Here we meet with a pure black earth, a foot in thickneſs, with a little mixture of gravel. The declivity of the land is gentle, and ſtretches ſufficiently far, for one to walk upright.

Purſuing our route we paſſed by a round mountain, encompaſſed with ſtones and marſhes. The latter are very common. They might be drained, and prepared for culture by manure, ſuitable to the productions we would familiarize. The moſt elevated might be turned int fields; the leſs elevated into meadows. The Laplanders ſay that, towards Norway, ſimilar lands have been peopled and cultivated. Thoſe which

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we ſaw might be tilled, if the Laplanders were made to quit their wandering life of ſhepherds, for the ſtationary life of tillers; or if the Swediſh colonies were to increaſe and extend by degrees to theſe mountains. It would be imprudent to plant an iſolated colony here. The conſtruction of houſes would be difficult and too expenſive, in a place from which the neareſt woods of fir are ſix miles diſtant. The neceſſary advances for two or three years would become burthenſome, to tranſport cattle by water would be difficult; to conduct them by land troubleſome. When the colony enlarged, they would perhaps want wood to build new houſes, or to incloſe fields, or even for firing. Trees, which grow more ſlowly than men, would not aſſiſt the wants of cultivation, and might deprive the coloniſts of the fruit of their advances and pains. The general maxim for the clearing of land, is to do it by degrees, by advancing from all the inhabited places which ſurround the untilled country. Men ſhould proceed ſtep by ſtep, like nature. The population and culture of a deſart muſt not be commenced at the centre, but at the circumference. The borders of a heath join to fruitful lands; it is there it ſhould be vivified by the communication of ſeeds and the ſources of cultivation. Every other method is in vain and ruinous. The nations of Europe who were willing to ſeize on the interior lands of America, have loſt their population and their culture. The Engliſh, who have only occupied the ſea coaſts, have gathered ſtrength, increaſed, and enriched themſelves. The colonies of the interior will in the end be invaded by thoſe of the extremities. It is becauſe the former are inſulated, while the latter are ſupported by a free communication with their metropolis.

We travelled two miles more to arrive at the mountain of Kitſchewari. Although it was the middle of Auguſt, we walked over ſnow, with a kind of pattens made of green branches. We met with more ice-houſes, than could be wiſhed for in this ſeaſon, in the warmeſt countries of Europe.

Here the travellers ſeparated in order to proceed, ſome towards the north beyond the mountain, the others towards the ſouth over an extenſive and marſhy land. It reaches in the form of a circle for two miles to the S. $\frac{1}{4}$ W. Many hills of various heights are there obſerved, covered with ſome pines and buſhes. Thoſe who paſſed beyond the mountain, diſcovered to the N. E. and by E., the weſtern extremity of the lake Malgomai, about three miles from Kitſchewari: the two lakes of Lidſio, to the N. E. and by N. to the north, a part of the lake of Koultſio which the Anghermanna croſſes; to the N. N. E. the lake of Marſio which communicates with that of Malgomai. Lidſio is three miles and a half from the mountain; Koultſio and Marſio are four miles. From the ſame place are alſo ſeen, twelve miles to the N. E. the mountains of Lyckſele-fiall; Mars-fiall five miles to the N. N. E.; Fiald-fiall twelve miles north; Biork-fiall, nine miles to the N. W. and by N.; Arnas-fiall, twelve miles N. W.; the mountains of Norway 20 miles W. $\frac{1}{4}$ N.; Hammardahls-fiall, eight miles to the W. S. W.; Yemptelands-fiall, twelve miles to the S. W. and by S.; Block-fiall, four miles to the S. E.; and, laſtly, Arkſio, fourteen miles to the S. W., and many other mountains which, on account of their ſmallneſs, have no name, although it does not ſecure them from being covered with ſnow, nearly the whole of the year. In the midſt of this frightful compaſs, the traveller feels the ſuperiority of nature over human ſtrength. In other countries we find it yield to the induſtry of man, which changes the face of the earth. The ſea even affords a paſſage to man through its tempeſts, and its rocks. But here the mountains forbid him from afar to approach, and their ſummits briſtled with flakes of ice oppoſe to his audacity a barrier more formidable than the fires which formerly burned on a mountain of Arabia. The foot of volcanos is inhabited; the mountains of Norway and Lapland

can ſcarcely be faced. The Alps are croſſed; but it is to paſs into the beautiful and delightful country of Italy. The north defends itſelf by the horror of its proſpect, and its climate; but mountains of greater height than thoſe of the pole, have never arreſted the progreſs of the conquerors, who, for theſe ten centuries, have diſputed the richeſt country of Europe. Germany, France, and Spain, have ravaged by turns this ſame Italy, which is now the prey of thoſe nations, of which it was formerly the miſtreſs.

It will no doubt appear ſurpriſing, that mountains may be ſeen which are more than forty leagues removed, and that conſequently objects may be diſcovered at a greater diſtance on land than at ſea. But it muſt be obſerved, that this diſtance does not lie in a direct line, and that we reckon on the length of the path, which, deſcending from the ſummit of the mountains into deep vallies, by ſinuoſities and inflections, renders it of much greater length than it appears to the ſight. Beſides the place from which the eye embraces ſo vaſt an horizon, is conſiderably above the level of the ſea. The diſtance is very great from Hernoſand, which is on the ſhore of the gulf of Bothnia, to the mountain of Kittſchevari. We proceed from the one to the other, aſcending the courſe of the Anghermanna by caſcades, always increaſing in height from S. to N. Thus the foot of the mountain of Rod-fiall muſt be half a league higher than Hernoſand. It occupies more than an hour to aſcend from the foot of Kittſchevari to its ſummit. From the foot of that of Rod-fiall, there are three mountains equally high to aſcend. Now, if from the height of a maſt which is only ſixty feet, we can ſee to a much greater diſtance in the ſea than from the deck of a veſſel; from the ſummit of the mountain of Kittſchevari, or Rod-fiall, we ſhould ſee the ſummit of another mountain which is at the diſtance of twenty miles.

Arrived at the mountain of Swans which conſtitutes part of that of Kittſchevari, we pitched our tent, near a hut of Laplanders. The northern path had a much greater quantity of ſnow than the ſouthern, and it thence extended a mile farther. Beſides the mountains, we ſaw between the lakes, in the environs of Kittſchevari and Mars-fiall, hills overſpread with pines.

Theſe hills and mountains form no chains. They are all ſeparated, as if they had ariſen from as many different lakes, which had undermined their ſhores, and flowed out on all ſides. On the hills we meet with many ſprings, and in the vallies with ſmall lakes, or large marſhes, from which iſſue rivulets of conſiderable ſize, which diſcharge themſelves into the inferior lakes. It would appear that in theſe countries, the mountains are the work of the ſnow, which, tarrying for a length of time, and melting ſlowly, dig, tear up, and overthrow the ſurface of the earth where they have not a free and quick paſſage. In more ſouthern countries, the rivers carry along to the ſea all the waters which fall either in rain or ſnow. In the north, the blocks of ice break the earth and rocks, where the ſnow undermines in the end the land which it covers.

Between the gaps of the rocks, there is always ſnow, which the Aſehleſe call *Groubbar*, and which no doubt produces the ſprings that are met with at the ſummit. The ſnow fallen in winter melts in the ſpring, and, filtering between the ſand and ſtones, pierces and flows in rivulets through the clefts of the rocks: ſo many principles of ruin which concur to the formation of theſe iſolated mountains.

I have found on the higheſt ſome handfuls of black earth, collected here and there between the flints. I confeſs that I do not ſee any reaſon for this phenomenon, unleſs the ſnow contain this earth, and leave it on the ſurface in filtering through the ſands. This conjecture will not appear ſtrange to thoſe who believe that rain water may even be converted into earth.

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The ſand of theſe mountains is white, ſometimes as fine as duſt; and in humid weather it is of the conſiſtence of argil. The greater part of the rocks are of ſand-ſtone. Thoſe which are found ſcattered in the country, become nearly as hard as flint, no doubt by the action of the air and wind. Some, which appear to have the nature of lime-ſtone, are not of leſs hardneſs than the others. Some appear of alabaſter, and are harder than flint. In this hideous country are alſo ſeen a ſpecies of hematite, or blood-ſtone, black and grey ſlate, and many other ſtones, ſome of which reſemble iron ore, but are only flints and quartz: there are many of theſe ſubſtances among the ſand-ſtones.

The higheſt mountains of the north do not admit of trees. The ſnow and ice little accord with verdure. But on the loweſt, as well as in the vallies, we here and there meet with firs. We cut down the largeſt we ſaw, and by the circles of the vegetation, we judged it to be two hundred and forty-ſix years old. Notwithſtanding it was only thirty-two feet in height, its diameter near the root was only eighteen hundred and fifty parts of our geometrical ſcale, that is, nine inches and three lines. All its branches were bent towards the ſouth, and inclined to the earth. This direction, no doubt, ariſes from the ſnow which the north wind drives towards the ſouth. The top of this tree was pointed, and its trunk unfurniſhed with branches: we obſerved, that it had grown in ſpite of the ſeaſons and climate; ſimilar to a veſſel diſabled and without rigging, caſt upon a deſart ſhore by tempeſts and currents.

About this wild pine were birch-trees and poplars, ſmall, knotty, and nearly all withered. Theſe trees periſh by the exceſs of cold as ſoon as they riſe above the height of eighteen feet. They have the fate of the Laplanders, whom nature does not permit to grow to the ordinary height of man. But, in the place of lofty trees, we meet with junipers of a brown colour, and dwarf oziers. The latter are remarkable by a ſingular difference in the ſex. The leaves of the male ozier are green, ſmooth, and ſhining; thoſe of the female ozier are grey and rough. If the bark of the male ozier be ſcraped with a knife, the raſpings reſemble lint. The Laplanders ornament the cradles of their children with it, and put it into their ſhoes. But the bark of the female ozier is too hard for ſuch gentle purpoſes. One would imagine that men deceive themſelves, when they give the qualities of their own ſex to theſe female trees. But we obſerve them with berries which they bear, when they are planted near a male ozier in an iſolated place; while we ſee no berries on thoſe kinds of trees which are aſſembled together without order. Monogamy is therefore neceſſary to oziers for fruitfulneſs, as it is uſeful to men.

Although theſe ſhrubs are very near the earth, and almoſt creeping, they increaſe on the mountain of Swans, and there thrive ſo well, that it may be ſaid to be their proper country. In the ſouthern diſtricts, the berry of this tree ſeldom ripens. It grows in great quantity in the fields watered by the Anghemanna. This river, no doubt, diſperſes it in its courſe the berries which fall into it near its ſpring.

The ſoil of the hills where the pines grow is nearly every where ſandy. A little black earth is ſometimes perceived between the ſtones. Graſs is alſo ſeen in thoſe parts expoſed to the ſouth. The colour of the graſs becomes greener as we deſcend. This diſtrict produces in particular wild ſorrel and other plants which the Laplanders eat, or mince and mix with their milk, when they cook it.

When the weather is ſerene, the mountain of Swans exhales from its ſummit, and particularly from the fountains which are ſeen to iſſue from it, a thick miſt, which obſcures the ſun even in full day, and which is inſenſibly converted into clouds. But

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when the weather is gloomy, this miſt only riſes from the middle of the declivity, about as high as the place where we were encamped between two Lapland huts. It was ſo near us, that one of our fellow-travellers walked for a whole night in this miſt without being able to get out of it, nor to perceive the fire we had purpoſely kindled to ſerve him as a light-houſe.

In the time of theſe miſts, which commence in Auguſt, the cold is as ſharp in this diſtrict as it is at Stockholm in the beginning of October. The diſtance of three or four degrees of latitude, ſhould not occaſion ſo great a difference in the effects of the climate. We may therefore attribute the premature rigour of this cold, to the northerly wind which blows from the mountain of Swans.

The moſt neighbouring ſummit to this latter appeared very near us, and yet the rein-deer which we perceived running, ſeemed ſo ſmall, that we could ſcarcely diſcern a flock of ſixty. How ſhould we meaſure the diſtance between theſe two mountains? We had no trigonometrical inſtrument. The mountain was too ſteep, to judge of its diſtance by the number of paces. We could only eſtimate it by the power of the voice, or ſound. I therefore went there, and the Baron Cederhielm remained near the tent. This diſtance appeared to us about two hundred fathoms. From the ſight alone, I ſhould have judged it of a hundred and fifty; but the tent appeared to me at a greater diſtance, than the ſummit where I was ſituated appeared to thoſe who obſerved me from the tent. This is a phenomenon in optics, ariſing, no doubt from the difference in the projection of light, or in the reflection of the rays. I was not leſs ſurpriſed at the thirſt which is experienced on theſe mountains, while it is not felt in the climate. Nevertheleſs the waters are very clear, taſteleſs, and commonly produced from the melting of the ſnow, which ſhould quench the thirſt; unleſs the ſalts and the nitre with which they abound produce the contrary effect.

From the lake of Malgomai, we had beheld all the country to which cultivation might extend. It appeared to us impoſſible to be carried farther. Thus we reſolved to walk back, after having waited three days in vain for clear weather. The miſt which the little heat remaining occaſioned to exhale about theſe mountains covered with freſh ſnow, deprived us of the ſight of the ſun and ſtars. It was time to return to the abode of light and the living. Nature only offered to our obſervation the proſpect of an eternal winter. It threatened to envelope us in its froſts, if we delayed to reſume a route, which even in the ſummer had cauſed us great difficulty to purſue. The lakes were about to be covered with ice; the trace of the paths effaced; the Laplanders buried in their huts. Navigators are ſtill happy, when they only behold ſky and water: but to wander among ſnow and clouds, unable to advance, or only to advance to be bewildered; to have rivers to deſcend by frequent cataracts, between points of rocks from which are detached flakes of ice ſufficient to break a ſmall boat to pieces, or to ſink it; this was the ſituation that awaited us if we made the ſmalleſt delay. We haſtened, with the ſatisfaction of having obſerved not lands to conquer, but countries to till, a country ſufficiently extenſive to people, to cultivate, in fine to render worthy of the innocence of its inhabitants. A ſhort ſummary of their manners ſhall complete the picture of their dreary region.

Such is the weakneſs of the human mind, that it can only arrive at truth through a crowd of errors. It is only by reading the different deſcriptions which travellers have made of the form and manners of a people, that we can obtain a perfect knowledge. Theſe pictures differ according to the obſervers. A traveller almoſt every where meaſures man by his ſtature, and judges of their manners by his education. But thoſe whoſe

whoſe underſtanding is more extended, and their minds more enlarged, are not the moſt difficult to recognize man in the ſavage Laplander. Very limited minds alone find in him the brute.

The Laplanders are ſtrong, and of a tolerable ſtature. Their limbs are coarſe, their hair long and thick, face ſmall, their forehead ſtrait, the beard ſmooth, their breaſt and ſhoulders broad, and their legs commonly bent.

The women, on the contrary, have ſmall limbs, hair of little thickneſs, and narrow breaſts. The men are incontinent without being vicious, and the women extremely licentious; that is to ſay, that both ſcarcely know pleaſure, nor crime in love; and as they almoſt attach no moral idea to the intercourſe of the ſexes, they make no virtue of continence. But the Lapland women would be capable of inſpiring it, by the infirmities with which nature ſeems to have armed them againſt the attempts of aggreſſors.

The only advantage which they may poſſeſs over women of other nations, is of being ignorant of the alteration of faſhion in dreſs; if however it is a merit in a weak and ſlender ſex, to be free of thoſe frivolous taſtes which give it ſo much importance. One would ſay, that they are afraid of pleaſing, leſt they ſhould have cauſe to bluſh at the flight of the conqueror, at the moment of triumph. They pretend to have preſerved the attire of ancient times; yet I do not believe it, nor think that the Laplanders have a ſufficient reſemblance to the Iſraelites to be deſcended from them, as ſome would perſuade them. It is more reaſonable to think that tranſmigrations of nations proceed from the frozen zone to the torrid, than from the equator towards the pole.

A nation has ſcarcely any occaſion to borrow its cuſtoms from another; at leaſt all the cuſtoms which relate to the firſt wants of life. The Laplanders live and dreſs as the climate permits. They uſe no linen cloth; this only accords with warm countries. All their foreign luxury conſiſts in a very coarſe woollen cloth. They have caps of it which they border on all the ſeams with a lace of a richer or more ſhining cloth. They make their doublet of it; it is a great coat with long ſleeves, wide about the neck, and open at the breaſt. Yet they cover the ſkin with a ſtomacher: in the bad weather of ſummer, this piece of cloth is covered with an old furred robe; in the winter with a warmer fur. In the ſevere cold of that long ſeaſon, they wear caps or cloaks of ſkin. The Laplanders of the woods in ſummer wear ſhoes made of the bark of birch; the Laplanders of the mountains in winter have ſhoes of rein-deer ſkin. The trees and the rein-deer are their reſource for clothing and food. They have neither in abundance; but they are ſeldom in dread of want. Careful to provide ſubſiſtence for themſelves, they do not expect it from public proviſions and magazines, which may ſuddenly raiſe in price, or totally fail. They are not ſubject to ſcarcity or famine, before the granaries or tables of opulence, which overflow with ſuperfluity. They are not ſeen to wander pale and diſheartened in the provinces, about caſtles and parks, of which the maſters make parade at court, or in the capital, of gold, ſilver, diamonds, and ſumptuous dreſſes of various colours, where the people might reclaim its blood, and the labourer his reward.

The dreſs of the Lapland women is nearly the ſame with that of all the ſavage women of the north, ſhort and tight, differing little from that of the men. Extreme want in reſpect of clothing, makes no diſtinction of ſexes except by concealment; and if they conceal them in the north, it is becauſe the cold will not ſuffer nudity. Nevertheleſs, even in Lapland, the women are willing to diſtinguiſh themſelves, at leaſt in their head-dreſs

by a fillet of woollen cloth, for want of ribbons of ſilk, and a light border of wool, inſtead of lace.

The dwellings of the Laplanders are no way ſuperior to their clothing. They are of three kinds known by the name of *Kator*. The firſt is a ſort of tent compoſed of poles diſpoſed in a circular form; it is covered with branches of the pine, cloth, or hides; ſo that the rain cannot penetrate. A hole contrived at the top, ſerves at the ſame time for chimney and window. But the tranſparency of the ſkins which incloſes the tent, compenſates for the little day light afforded by the aperture of the roof. The door is a frame compoſed of two upright and ſix croſs bars, to which is attached a ſquare piece of cloth, yet it is ſo narrow that it can only be paſſed ſideways. But they ſeldom quit their tents, and never enter in a crowd.

The ſecond ſpecies of tent is of a more oblong form, but round. It conſiſts of four poles a little bent at the top, and joined together by a ſquare frame. In all other reſpects it reſembles the former.

The third kind is the moſt commodious, and beſt ſuits the more ſociable Laplanders. Every family builds one of theſe dwellings. The greater part have them near the church of Aſehle, to paſs the Sunday. Theſe cabins or barracks, are formed of four partitions of planks thruſt into the earth, ſix feet in height, covered with a ſort of roof compoſed of very ſhort poles ſupporting green turf and the bark of the birch. The door alſo made of planks, is ſmall and ſerves for a window. The hearth always in the middle conſiſts of a flat and round ſtone, upon which they place wood, and the ſmoke ariſing from it departs through the hole in the roof. In this houſe all the Laplanders ſleep together, men and women, children and fathers, married or ſingle. But the crimes and debauchery which accompany both miſery and opulence in civilized countries, never enter into theſe little habitations. The climate prevents the temptation of licentiouſneſs; ignorance and ſimplicity, have not even the idea.

The houſehold utenſils conſiſt of pots of braſs, and ſeldom of iron; wooden plates and ſpoons. Men who do not tarry in one place for more than three weeks, ſhould not have many goods to remove. A chain furniſhed with hooks, where they hang their pots and other kitchen furniture; ſome cheſts ſecured by plates of iron, a flint, boats and nets; theſe form all the luggage they have to tranſport on their ſledges. With ſo ſmall a retinue, they do not fear the meeting of robbers, nor the purſuit of creditors, nor the viſit of extortioners.

The ſubſiſtence and manner of life vary among the Laplanders according to the ſoil they inhabit. The Laplanders of the woods, ſuch as thoſe of the province of Aſehle, who retire in winter to the foreſts of pine trees, where their rein-deer feed on the moſs of the trees; theſe Laplanders moſtly live by fiſhing. The waters of that region, and the river Anghermanna in particular, furniſh them with perch, trout, and pike. In the failure of theſe fiſh, the lakes have others, and each lake have ſome which are peculiar to it. In general the fiſh are finer and fatter, but not ſo large in the lakes. Should the goodneſs of theſe fiſh be attributed to the purity of the waters, to the length of the winters during which the fry are not diſturbed, to the great number of fiſheries, which not permitting the Laplander to travel over them all in a year, the fiſh are left to increaſe and fatten? It is beſides a cuſtom among the Laplanders and Swediſh coloniſts, to pay regard to the time of ſpawning, and to leave the fiſheries at reſt like the lands. Every father of a family has a ſpace alloted for fiſhing; but this ſpace comprehends ſo many lakes, that the year is cloſed before he returns to the firſt in which he fiſhed. A certain policy finds its way amongſt men in the moſt ſavage ſtate, whether hunters or fiſhermen.

fiſhermen. They have no occaſion for kings, philoſophers, nor pontiffs, in order to live in peace, and to obſerve thoſe rules of juſtice on which depends the ſafety of individuals. Nature alone dictates to them, and her voice is ſufficient.

They commonly make uſe of nets called *Ryſſior*, which they ſtretch at the mouth of the rivulets. They have four ſorts, which bear the name of four ſpecies of fiſh: the firſt, which is called a *Mort* net (a ſpecies of gudgeon), has its meſhes two fingers wide; the ſecond, which is the *Pike* net, has its meſhes four fingers wide; the third, which is called a *Suk* net, has its meſhes four inches wide; and the fourth, which is called a *Skaft* net, nearly reſembles the pike net. They have beſides, nets ſtretched upon poles: they have alſo nets for winter. The poles or ſticks of theſe firſt are a little longer and thinner than thoſe of the nets of Stockholm; ſome are only an inch in diameter, being twelve fathoms in length. The reaſon of this little thickneſs is, that the fiſhermen, being always in ſmall bodies, they would not be able to carry nor manage them if they were larger. The uſe of the large net may be ſaid to be unknown in the province of Aſehle: they are not neceſſary in waters ſo limpid as thoſe of theſe fiſheries.

The Laplanders eat ſome of theſe fiſh as ſoon as they are taken out of the water; others they dry for the winter, and the remainder they ſell to pay the impoſt. In the ſpring they kill a great quantity of birds, which they never dreſs, but dry, after having ſtripped them of their feathers: I have eaten of them, and the flavour was not unpleaſant.

During the autumn the Laplanders of the woods ſearch for the caves or dens of the bears, and in the winter they hunt them armed with firelocks and ſtakes: they have dogs which they ſend to rouſe the bear from his den. A Laplander will often alone attack a bear, and the animal ſeldom eſcapes. When our ſoldiers or officers ſhall thus dare to brave a bear in his den, they will only poſſeſs the courage of the Laplander. Thoſe people are therefore not ſo puſillanimous, or perhaps it is only in the chace of men. But it is what they are unacquainted with, and the preparations of a camp under arms or tents, and the regular and meaſured march of men and horſes, covered with gold or ſteel, plumes of feathers floating in the air, the duſt and ſweat of war, heaps of enſigns and trophies, and decorations, and pompous and magnificent titles, which only conceal at the bottom carnage, wounds, blood; the ſhrieks, convulſions, palpitations of ten thouſand innocents ſlaughtered on one another in the ſpace of an hour, by twenty thouſand aſſaſſins, to appeaſe the jealouſy of a man, or the caprice of a woman.

At leaſt the Laplander eats the fleſh of the bear he has killed; he ſells the ſkin, if he does not make uſe of it for clothing himſelf. This bear is the enemy of the rein-deer of Lapland; and for want of deer he will attack men, if extremely preſſed by hunger. Nature has decreed war between the bear and the Laplander; but does ſhe compel entire nations to leave their fields untilled, in order to go and deſolate thoſe of a diſtant country; to put to the ſword a neighbouring nation, whoſe only crime is a wiſh to enjoy its own rights; to exterminate, as we have lately ſeen in Servia, thouſands of coloniſts, tranſplanted at great expence to a deſert country, which they had cultivated; to croſs two wide ſeas, in order to ſpread fire and devaſtation to the two extremities of Europe?

Whatever be the latter, their fate occaſions more horror than the life of the former excites pity. The Laplanders of the woods live on fiſh; thoſe of the mountains on their rein-deer. The milk of theſe animals is ſo rich, that mixed with three-fourths water it is ſtill as thick as the milk of the cow. We preſerved ſome in a bottle for the length of ſeventy-two hours, and we found it ſufficiently ſweet to boil and drink. A rein-deer gives each time half a bottle of milk. When they would milk the mothers, they lead the fawns or young to paſturage, where they remain till noon unmuzzled; they

they are then led back to the fold, and about five in the afternoon they are re-conducted to paſturage: at night-time they re-enter their habitation, and the young are muzzled to prevent their exhauſting the milk deſtined for the ſupport of men. Theſe animals are ſo gentle, that I think they might diſpenſe with ſhutting them up in folds: they never leave them before the dog of their ſhepherd, and till they hear the bell of the rein-deer which is brought before, in order to ſerve as guide; but then they all ruſh out together, diſperſing themſelves in every direction. In very hot ſummers they graze till midnight, and repoſe during the exceſſive heat; they are at that time encompaſſed with fire, to protect them from the flies: ſuch are the rein-deer of Aſehle. In the more northern parts of Lapland they are tamed, and are more difficult to manage.

The Laplanders immediately boil part of the milk they draw: they leave the remainder till it becomes of ſufficient conſiſtency, to be preſerved as a proviſion for winter. In that ſeaſon they eat it boiled in water: the taſte, though ſtrong, is not diſagreeable; but it requires time to be accuſtomed to it.

The life of the Laplanders, whether they inhabit the woods in the plains, or encamp on the mountains, is really ſevere and pitiful; but it is yet preferable to that of the Greenlanders, who have only the choice of the ice of the ſea and that of the land; who have not even cattle for their companions, and for ſupport in their miſery. It is better than the life of the people of Siberia, who only ſee the arrival of ſoldiers to oppreſs them, or diſgraced courtiers, whoſe fall announces a frightful power, and ſpreads conſternation in the deſerts. This needy and wandering life of the Laplanders is no way uneaſy or diſtreſſing to them: they do not poſſeſs the talent of writing; but the liberty of talking remains, for they have only to complain of the evils of nature. All equally ſubject to her power, and almoſt equally independent of that of man, they have at leaſt no fear of being puniſhed for their virtues, of being perſecuted for their opinions, or being betrayed by their good faith. Society amongſt them does not require thoſe diſcretions which occaſion a public idolatry of the faſhionable vices: they are not reduced to the neceſſity of chuſing between clamour and diſdain, between obſtacles which repel talents, and the oppreſſion which follows obſcurity: they do not perceive any trace of that deſire to injure which wearies and diſheartens the beſt intentions. Among them the ſentiments of the honeſt are not ſtifled by the wants of competency: in a word, they receive all their benefits and all their evils from the hands of nature; and have neither to fear the unforeſeen blows of fate, which bring the indigent to puniſhment, nor the invaſions of war, nor the thunderbolt of deſpotiſm, which ſometimes falls upon opulence: they are only acquainted with the viciſſitudes and injuries of ſeaſons, leſs deſtructive to man than the viciſſitudes and injuries of fortune: in fine, the exemption from our pains indemnifies them with uſury for the privation from our pleaſures.

They are ſeldom expoſed to abſolute want. The Laplanders of the mountains, in particular, find on the heights lakes abounding in fiſh. They never ſpread their nets without drawing in them ſeveral ſpecies of fiſh, but particularly of red fiſh, which they call *Rodfiſh*. As this ſpecies is different in Lapland from many other known elſewhere under the name of red fiſh, I ſhall here ſubjoin a deſcription of it.

They took one in our preſence; it was only nine inches long, though it ſometimes may be two feet in length. This fiſh, in general, has the form of the trout. On each ſide are two broad ſtreaks, very diſtinct, of a duſky colour, and croſſing each other. The firſt, formed by little points, ſituated very near one another, and of a dark green, commences near to the head, and proceeds along the back bone, terminating about the middle of the tail. The ſecond ſtreak, commencing at the fore part of the fin, which is ſituated on the back, extends to below the belly, where it is of the colour

of a lemon: a little beyond is ſeen a third ſtreak, ſhorter, and of the ſame colour, but not ſo ſtrong. The back is dyed like that of a ſmall marbled perch; and the belly is of a fire colour, which varies in the two great diviſions made on each ſide, by the two ſtreaks which extend to the right and left along the body. This colour is more duſky on the fore part of the back, and clearer towards the other extremity. The edge near the head is of the ſame colour as the back; but it becomes lighter as it approaches the fin, where the colour of the pale fire changes by degrees about the navel into a yellowiſh colour. This fiſh, covered with ſpots like the trout, alſo reſembles it by the form of the head, and the parts compoſing it: nevertheleſs the eyes are larger, and a little more elevated, the bone of the upper jaw ſhorter, and that of the lower longer. Above the jaws it is of a duſky green.

The palate is of a blood colour: it is divided into four parts; of which the firſt has twenty-two teeth, and each of the others twenty. The colour of the fins is variable, like that of the body of the fiſh; they have each fourteen joints.

The prickles of the back are twelve in number, very pointed, and of a duſky green; the laſt is double the length of the firſt. Thoſe beneath the belly are of a bright yellow in front; towards the middle of a deep brown, the tint of which is ſingular; and towards the extremity of a fire colour: there are nine on each ſide.

This fiſh feeds on the dead flies which fall into the water. Near a caſcade we ſaw many little fiſh ſeizing on a dead fly; but I cannot affirm that they were red fiſh.

For the reſt, ſimilar deſcriptions can only intereſt profeſſed naturaliſts, by their inſtinct, to keep a regiſter of every thing. But when a botaniſt deſcribes all the leaves of a plant, with an exactneſs driving his readers to deſpair, a traveller may be allowed to reckon the ſpots and fins of a fiſh. Lapland poſſeſſes ſo few animals and terreſtrial plants, that the admirers of natural hiſtory are reduced to ichthyology, for the food of their curioſity; as the Laplanders are to fiſh, for the greateſt reſource of their ſuſtenance.

Nevertheleſs they have beſides their fiſheries, green plants which they eat, ſuch as clover. Where the cattle feed on moſs, the ſhepherds muſt be contented with herbs. The rein-deer are ſo gentle and quiet, that the women guard and lead them. The care of their children and flocks, which they raiſe and feed at the ſame time, conſtitutes their principal occupation. A mother conducts her rein-deer, having her child at her breaſt: ſhe ſuckles her children while making the young fawns graze. Theſe innocent beings can ſleep together without danger. The ſhepherdeſs ſometimes beholds them all ſkipping and playing together without dread of accident. If tears flow, they are tears of joy. Her mind is not diſtreſſed, nor her heart torn, by the afflicting idea that ſhe may one day behold this child of her breaſt torn from her arms, to ſhed in battle the blood he has drawn from her.

The Laplanders of the mountains ſubſiſt more on their rein-deer, and thoſe of the woods more on fiſh. Though the latter, living nearer to cultivated and populous countries, have leſs diſtance to travel than the former, to traffic with their proviſions, they are nevertheleſs more indigent. I am inclined to attribute their miſery to brandy: for theſe two years they have purchaſed it at a great price; and as I have been informed, a crown was given laſt ſummer for a glaſs of brandy. Perhaps it may have been imagined that this was the means of giving them a diſlike to it, but it has only ſerved to impoveriſh them. When a people are accuſtomed to things which pleaſe their taſte and ſenſes, but particularly to ſtrong liquors, they will not renounce them. It is a ſnare to give them theſe taſtes; but it is a cruelty to make them pay an exorbitant price, when they have become accuſtomed to them.

The Laplanders regard the paſſion they have taken for brandy as a misfortune. But when we repreſented to them the danger of this cuſtom, and how uſeleſs was this foreign liquor to them; they anſwered, that without brandy they could have no wives. In fact, the firſt propoſition of marriage is made with a glaſs of brandy in the hand. It is in joy this bargain is concluded; for they ſell a woman like a rein-deer, and pay for her from five to nine crowns. This would yet be too much, if the man were a true purchaſer. The leſs a woman coſts, the more valuable ſhe becomes: at this rate, a Lapland woman muſt be an ineſtimable treaſure. But thoſe are ideas taken in a world where delicacy is an element of ſelect ſouls. The Laplanders are not ſufficiently corrupted to have occaſion for theſe refinements. The ſublimity of manners and ſentiment ſuppoſes a ſociety depraved, where virtue requires heroiſm to reſiſt contagion; where we are only great, elevated, ſingular, becauſe all are little, baſe, and common.

Whether it be a received prejudice, an agreement, or love of preference, it is ſaid that the Laplanders have more diſlike than inclination for promiſcuouſneſs in the intercourſe with their women. They do not unite themſelves to one another accidentally, like their flocks: they even reſpect the degrees of conſanguinity, which are ſo religiouſly obſerved among civiliſed nations, in order to unite again by the ties of love and blood, families which have been divided by property. If the relations were always to marry among one another, each race remaining foreign to all the others would form a diſtinct ſociety, and diſcord would ariſe from this ſocial ſtate. It is neceſſary for families to intermix, in order that fortunes may circulate, intereſts unite, and that prejudices and manners may be ſoftened. The Hebrews were commanded to marry in their own tribe; but it was perhaps a means of encouraging them all to population. Twelve tribes among the Jews were more certain of agreeing, than the two claſſes of plebeians and patricians among the Romans. Between theſe two factions nothing could bring back the equilibrium; among twelve claſſes it maintained itſelf: all with emulation counterbalanced each other, and each was of ſufficient weight to prevent the predominance of any one. Thus the circulation of blood from family to family is an infallible guarantee for the peace of ſtates. We do not hate beforehand a family into which we may one day enter. We ceaſe to deſpiſe a race to which we may be united. We ſupport without ſpleen a diſtinction of rank and honour, from which we are not excluded without hope, eſpecially in thoſe empires where labour leads to fortune, and fortune to honour. In this paſſage there are only haſty and ſudden revolutions, which claſh all conditions, when a man finds himſelf ſuddenly tranſported by money or favour from the level of the crowd to the ſummit of greatneſs.

Among the Laplanders every one is of the common claſs, and this natural lowneſs does not excite the envy of any body: the order of peaſants is the only one. There are not ſufficient riches in Lapland to eſtabliſh a large body of nobility, a numerous and powerful clergy, as in Sweden. Their drums of divination do not create much noiſe, and thoſe of war are almoſt unknown.

In fine, the little fruitfulneſs of the Laplanders exempts them from poſſeſſing of privileged conditions, ſupreme honours, burthenſome and brilliant titles. They are ſufficiently limited to be devoid of ambition, and only know how to defend their life againſt cold and want, without attacking that of other men. They have few children, and perhaps love them the better. A father rejoices to have a ſon, becauſe he has not to fear for him thoſe whims and even virtues which may equally conduct him to misfortune. He never ſays to himſelf while receiving him from the breaſt of a mother into his paternal arms, perhaps in my old age I ſhall expire on the wheel accuſed of having aſſaſſinated this ſon, whoſe misfortunes or ſuperſtition ſhall have armed his hands againſt his own life.

As

As ſoon as a child is born, he is wrapped without any ſwaddling clothes in a piece of woollen cloth, and placed in a ſort of wooden caſe, wide at one extremity and narrow at the other, a cradle much reſembling a coffin. The bottom is concave, and the ſides are only raiſed to the level of the child. But to prevent his falling out, two hides are paſſed over his body, and faſtened ſufficiently tight. Theſe cradles are ſuſpended in the tents, expoſed to the ſmoke; two cords are attached to rock the children, for they rock them: this cuſtom begins to appear prejudicial to us; but the example of ſavages inſtructed by nature ſeems to juſtify it. Beſides the hammocks of the Negroes, and the ſuſpended cradles of the Laplanders, have no occaſion for the hand of a nurſe to lull the children to ſleep. The natural oſcillation which they have, ſupplies this attention. It is even more gentle and natural than the jolting of a cradle placed on a plane, and which is agitated by a motion too irregular no doubt not to be ſometimes hurtful, or pernicious.

In Lapland we may judge of the education of the children from the manners of their fathers. In Europe this would often be a ſlender inference. The firſt education of youth differs much more among us, than among the Laplanders, from the remainder of life; and it perhaps is not to our advantage. In the age of innocence we imbibe errors; in the age of knowledge we imbibe vices. Thoſe alone who have no education, are nearly equally unhappy in all the ſtages of life; too enlightened not to feel its evils, too limited to overcome them. It is not thus with the Laplanders.

Before I ſaw theſe people, I had pictured them to myſelf as a ſtupid race. I have had great reaſon to be undeceived. They have received from nature the ſame advantages of body and mind as the reſt of men; but to the greater part of the Laplanders theſe benefits are loſt. An exceſſive love of liberty which they poſſeſs, ſo as not to wiſh for any empire among themſelves, a profound ignorance maintained by the prejudices of their education, remove all idea of a reaſonable ſociety. They love better to abide in the miſery in which they are born, than to releaſe themſelves from it by labour. To the moſt delicious diſhes they would prefer the liberty of eating the rind of the pine, or clover, to ſatisfy their appetite. They are not acquainted with fixed hours for repaſt or ſleep. To lye on the hard and dry earth, between thick ruſhes, and bear or rein-deer ſkins, better ſuits their ungovernable character, than a bed of the ſofteſt down, which they only enter and leave at times regulated by cuſtom or buſineſs. The leſs ſoft their bed is, the leſs they remain attached to it. They have no dread of meeting with the anxiety of watchings, or of the next day; the wakefulneſs which burns and parches; the vapours of high living or of voluptuouſneſs. They forget their hardſhips, where ſo many others encounter them.

Independence in their opinion is true happineſs. Jealous to exceſs of every thing which may injure this ſovereign wealth of their life, their imagination is very lively and ſenſible, though in a cold climate. Hence ariſe the extacies of their pretended magicians, the ability of theſe people in counterfeiting the ſounds of the voice, the geſtures and motions of thoſe who ſpeak to them. Equally timid with their rein-deer, and ready to flee at the leaſt noiſe, their propenſity to ſuperſtition, their horror at the idea of ſervitude and conſtraint, their eaſily being alarmed, and fainting at the ſlighteſt accident; are all indications of a ſenſibility of organs, not commonly obſerved among the ſavages of the north. Perhaps in this reſpect they reſemble certain ferocious animals who are ſtartled at every thing with which they are unacquainted; as if fear were the firſt ſentiment of every creature that is careful of its preſervation.

After the character of the Laplanders, it may be judged impoſſible to ſubdue them by rigour; but eaſy to win them by gentle means. When they are convinced of the

benevolence of thoſe who ſpeak, they willingly liſten and readily conceive. If they were more induſtrious, their condition would become eaſier, they would increaſe their money both for the means of living, and for paying the impoſt. Though it is ſo ſmall as not to exceed ten copper crowns for the richeſt Laplander and all his family, they find it exorbitant. Yet the province of Aſehle only contains fifty-three inhabitants ſubject to the tax. Hence we perceive what revenues Sweden may derive from Lapland.

My fellow traveller, the Baron of Cederhielm has endeavoured to encourage the Laplanders to quit the miſery, in which their natural inertneſs retains them. He had carried half a caſk of rye, with the intention of trying whether the corn would thrive in this country, of which he had conceived the moſt ſanguine hopes. But finding the difficulty of attempting the execution himſelf, and unwilling to quit Lapland, without having contributed at leaſt to ſome happy trial for its improvement, he ſearched for a ſoil proper for the experiment he had at heart. He imagined that he ſaw ſome lands of ſufficient goodneſs in the parts where they had eſtabliſhed folds of rein-deer and ſheep. He therefore had the corn ſowed in his preſence, by ſome Laplanders, to whom he had gratuituouſly given it, on condition that they ſhould inform him of the ſucceſs of his experiment. They could very promptly execute every thing which was directed to them, and they ſet about it with that ardour inſpired by a project the utility of which is conceived. Their docility was not unrewarded, and the Baron de Cederhielm has ſince informed me, that theſe Laplanders having come to the fair of Koll, had aſſured him of the good ſucceſs of his rye.

Induſtry alone is wanting to this people in order to render them happy; for they poſſeſs few vices, particularly thoſe injurious to ſociety. Compelled for ever to wander, and not always being able to tranſport the whole of their proviſions, they place them in magazines erected in the midſt of the woods, with four ſtakes ſupporting a roof. Theſe magazines continue open, and notwithſtanding, the proviſions there placed ſheltered from the injuries of the weather, are ſcarcely ever taken away. If urgent neceſſity do ſometimes prompt a Laplander to ſteal, it is only to appeaſe his hunger; he eats in theſe magazines whatever he chooſes, but never carries any thing away.

In fine, the Laplanders, humane and charitable towards the poor, live together in good underſtanding. Far from accuſing one another of their bad actions, they are careful to conceal faults and the guilty in order to ſave them from the rigour of the laws. This a conſequence of that national ſpirit, which a people ſubjected to a foreign dominion, nearly always preſerves, by a ſecret revolt againſt laws, or maſters, which are not of their choice.

Here I conclude the relation of my travels into Nordland and Lapland. I have written it as much for my own inſtruction, as with the intention of acquitting myſelf to the academy of a duty which the ſentiments of my heart impoſe. With more leiſure I ſhould have added to this work other particulars. But happily my occupations have ſpared my readers from great wearineſs. If ſome errors have eſcaped my attention and my ſincerity, I preſume to hope that thoſe who are ſufficiently enlightened to perceive them, will have the indulgence to pardon them.

I ſhall finiſh theſe obſervations, by a reflection which they have more than once ſuggeſted to me. I have not been able to think on the wiſe conſtitution of my native country, without feeling how advantageous it would be to it, were its citizens to apply themſelves to the knowledge of a country, in the proſperity of which, they poſſeſs ſo much intereſt. Our youth are all inflamed with the deſire of travelling into foreign countries. But what do they go to ſeek? Perhaps vices unknown in theirs; taſte and fancies

fancies which puerile in themſelves, but natural to frivolous and corrupted people, are abſurd among a ſober nation, to whom its poverty permits the exiſtence of morals. Even thoſe amongſt us whom an idle curioſity does not lead ſo far away from their native country, and who willing to retain ſome traces of the ancient Germans, do not paſs into that country where the Franks have entirely degenerated, at leaſt liſten with attention to the famous names of the Rhine, the Oder, and the Viſtula, rivers that have too long been dyed with our blood. But ſpeak to them of the Anghermanna, the Indal, and the Niouronda, and they ſeem alarmed and chilled merely by the idea of the cold and ſterility which they imagine to reign on ſhores ſo little frequented. Yet even in Sweden, nature poſſeſſes her reſources and her beauties.

Scarcely would we advance a ſtep to be acquainted with the ſurface of this kingdom, ſo fertile in ſoldiers, in officers, in heroes, who may be ſaid to have given a peace, at leaſt a permament ſtability to Germany, in preparing by their victories the celebrated treaty of Weſtphalia. Sweden would have preſcribed limits to Turkey and to Ruſſia, if the moſt warlike of her kings could have reſtrained himſelf in the career of his triumphs. But, ſince the deep wounds which by the ſucceſſes and reverſes of that monarch, have been inflicted on the heart of the nation, it has never recovered its glory nor its proſperity. The genuine nerve of the northern powers is wanting in their wiſhes. What is it? Population. It is only however by agriculture, that it can hope to eſtabliſh this ſpring of its valour, this ſupport of its fame. The aſhes of our fathers repoſe in the fields of battles, which overſpread Germany. Let us go to ſeek ſucceſſors to them, and children worthy of their anceſtors, in Nordland and Bothnia. Let us ſtimulate this land, and men will ariſe. Warlike and independent people, remember yourſelves; and if it do not accord with your virtue to conquer and ſubjugate, let it always be the greateſt object of your ambition, to break the chains, with which your enemies would enſlave Europe.

AN ACCOUNT OF THE LAPLANDERS OF FINMARK, THEIR LANGUAGE, MANNERS, AND RELIGION, BY KNUD LEEMS, PROFESSOR OF THE LAPLANDIC. WITH THE NOTES OF GUNNER, BISHOP OF DRONTHEIM; AND A TREATISE, BY JESSEN, ON THE PAGAN RELIGION OF THE FINS AND LAPLANDERS*.*

[Newly Tranſlated.]

CHAP. I.—*Of the Origin of the Lapland Nation.*

WHENCE they have drawn the origin of their nation the Laplanders themſelves are altogether ignorant; nor is it an eaſy matter to conjecture whence they are derived. In an iſland of the government of Sundmöers, called Gidſcöe, not very far from the gulf of Aaleſunda, is a ſtatue I ſaw myſelf when young, marked with verſes of the following import:

"Findus ſlew his brother, becauſe it was not agreed upon between them, how they ſhould go into the northern part of the kingdom, where his deſcendants had multiplied themſelves to an immenſe degree. From him are deſcended all thoſe Normans who call themſelves Fins."

But admitting, as ſome hiſtorians maintain, it ſhould be ever ſo clear, that the ſaid Findus, had been the great grandfather of that very valiant Norman, ſo celebrated in the annals of hiſtory, Findus, the ſon of Arno, and of the family of Gidſchöe, yet is it hardly probable, that the ſame ſhould be the founder of the Laplanders; for the Laplanders, whom we vulgarly call Fins, differ altogether from the other inhabitants of Norway, and their language is as different from that of the maritime Fins, inhabiting huts, as from the Laplanders who live in huts on the mountains; and has no more reſemblance to the common language of Norway, than the Arabic has to the Latin.

With the ancient Scythians the Laplanders hold ſome affinity, for what hiſtorians relate of them perfectly correſponds, ſuch as clothing themſelves from the ſkins of wild beaſts; their inhabiting without regard to any fixed or ſettled abode, the wild and rough parts of the country, the ficklenefs with which they change with their wives and children from place to place; their frequent uſe of animal food, and neglect of the culture of the ſoil. In all theſe cuſtoms they agree with the Laplanders, uſing juſt the ſame mode of life. So that if we cannot altogether conclude, yet it is fair to infer, that this nation is a branch of the ancient Scythians. What connection may be between the language of each nation, the learned, read in theſe matters, may diſcern. Thunder, which in the Lapland tongue is called *Dierme*s, the Scythians called *Tarami*.

Between the Laplanders and ancient Iſraelites a certain ſimilitude is obſerved. The Jews, in general, have black hair, ſo have many of the Laplanders. The Jews, like them, are of a low ſtature, and affix to the extremities of their garments, by divine precept, phylacteries; the Laplanders are accuſtomed to ſew to the borders of theirs certain bandages or fillets, which, in the chapter of the clothing of the Laplanders, I have ſhewn in many places. Saturday, the Jewiſh ſabbath, the Laplanders, by horrid ſuperſtitions, formerly kept holy in ſolemn rituals. Pſalmody, which the Jews attend to in their ſynagogues, differs little, if you hear the tune, from the modulations of the Laplanders. The Jews polluted the ſacrifices of their true God, which the Laplanders did alſo by

* Copenhagen, 1767, 4to. in the Daniſh and Latin Languages. The Notes and Treatiſe are of little conſequence.

their

their offerings to idols, conſuming the fleſh themſelves, and conſecrating to their falſe god the bare bones alone. That the Iſraelites had formerly erected ſtatues and monuments of ſtone, and had paid to them divine honour and religious veneration, there is no doubt, for ſo God himſelf ſpeaks to them: Make not to yourſelf idols, nor a graven image, nor place up a figured ſtone in your land, that you may adore it, becauſe I am the Lord your God; that the Laplanders were formerly guilty of this crime from the notoriety and abundance of proofs, would be needleſs to demonſtrate. It was impious among the Jews to raiſe up altars of hewn ſtones; the ſtones which the Laplanders conſecrated with religious worſhip were rude, and faſhioned by no workmanſhip. Men performed the offices of cooking among the Jews; the ſame became a cuſtom among the Laplanders, as is ſhewn in the chapter on their meat and drink.

Some of the precepts concerning women labouring under monthly infirmities, laid down in the Jewiſh laws, are obſerved by the Laplanders, who hold a woman for that time, and in that condition, in a ſtate of impurity. From all theſe it is ſufficiently manifeſt, that the Laplanders agree in cuſtoms with the early Hebrew race under a variety of compariſons; yet it does not follow that they owe to them their origin.

That the Laplanders had formerly made one people with the Fins of Sweden, or, as otherwiſe called, Finlands, is a common opinion, and every where adopted; and that as well from certain words common to each nation, as from other circumſtances not undeſerving of credit. But when I grant, that the Laplanders had of old made one nation with the Finlands, yet it appears fair and juſt to me, for the purpoſe of eſtabliſhing ſome difference between nations not little diſagreeing in language and cuſtoms at this day, to call by one common name, Laplanders, thoſe who inhabit on the coaſt of Finmark and Norland, paſturing their ſheep and cows, like the reſt of the Norwegians, as well as thoſe who wander with their rein-deer and tents over the mountains, and who conſtitute with the inhabitants of the coaſt as above mentioned, one and the ſame nation, agreeing in language, in dreſs, and cuſtoms; eſpecially when this nation, for ſome ages, had been diſtinguiſhed by this name. Nor do I ever remember to have heard, that any of them ever took this name amiſs, but the Fins of Sweden, or inhabitants of Finland, who feel themſelves hurt by it, if any one happened to call an inhabitant of Finmark a Fin, contending that he ſhould be called a Laplander, and that the name of Fin, as a more honourable appellation belonged peculiarly to him. Led then by theſe reaſons I ſhall call them every where in this Hiſtory *Lappones*, Laplanders.

CHAP. II.—*Of the Lapland Language.*

THE Lapland tongue ſeemes to ſtand detached and obviouſly different from all other languages, except the Finniſh, with which it holds ſome affinity and analogy, yet not ſo much as the Daniſh idiom holds with the German. This language poſſeſſes, as I have already ſhewn, in the preface of the Lapland Grammar I have publiſhed, certain peculiarities in common with the Hebrew, but I dare not be bold enough to aſſert, that it derives it origin from this language. In the ſaid preface I have quoted alſo certain words which ſeem to be derived from a Greek or Latin origin, but thence it little follows that they were pure Greek and Latin words thus adopted into the language; for they might have been vernacular, not foreign. And though this language contains not a few words akin to the Swediſh, Daniſh, or what may be ſaid with more truth and propriety, to the Norwegian idiom, yet in moſt words it ſo far recedes from theſe ſaid

languages, that if each, using his own dialect, should speak his own language, the one could not understand the other.

But this language to this day has been rejected to that degree, that it is little known or cultivated by the Norwegians themselves, the neighbours of the Laplanders, to say nothing of other nations more remote, though it is thought not less deserving of cultivation than other languages established through the globe, and such as if duly cultivated would become distinguished by many excellencies, as having the means of recommending itself by its genius, and a certain conciseness of phrase, as a whole period, which, in the Danish is expressed by a circuit of words, in the Lapland language is expressed by a single one; for example, my small loaf, in the Lapland is *Laibatzhiam*. The note of the diminutive *Atz* and the pronoun *Am*, mine, being joined to *laibe*, a loaf. But the whole genius and character of this language I have so clearly explained and laid down in the Lapland Grammar, lately published by me, that a few examples will be sufficient, I hope, for my present purpose.

In the Lapland language the interchange of consonants takes place between the b and p, b and m, f and v, which are labials; between the palatials g and k; between the dentals s and z; between the linguals d and n, d and t, and between the labial f and the palatial letter k. The letters gn united in one are expressed by a nasal sound. In the pronunciation of many words, a certain aspiration of breath with a hissing sound is observed. The letter d is sometimes pronounced with this aspiration, and there are certain dipthongs of difficult pronunciation. The vowel y seldom occurs. As to what belongs to accent or tone among the innumerable Lapland words I have met with, I have not found one that is marked for an elevation of the voice.

There is not a great number of proverbs in this language; but so numerous are the diminutives with which it abounds and recommends itself, that I know of none equal to it.

The Danish word *Camerat*, a companion, in the Lapland is expressed by two words, *Passe veelje*; for when a Laplander salutes a Norwegian peasant, he speaks to him in these kind words, *Passe veelje*, that is, my friend, my companion, though in strictness it may be holy brother; if a woman, his manner is usually, *Passe Oaabba!* literally, Holy sister.

The rein-deer that are castrated are in highest estimation among the Laplanders, as surpassing the rest of their kind in size and fatness, and as of the greatest use to their owners. Hence the expression, *Haerge. Tetz*, a castrated rein-deer itself! by which eulogy they do not in common honour any one, unless he is esteemed worthy of the highest praise. A Lapland lictor, or, if it sound better, a tribune of the country people, in Norwegian, *Lensmand*, whose name was John Peterson, when somewhat puffed up with himself and disposed to brag, was used to say, *Haerge Zhionvga;* what a glorious thing is a gelded rein-deer!

On a child bearing woman near her time, they usually say; *Nissón lae kistzhiembeiviin*, which faithfully translated is; the woman is in the days of inspection; by which form of expression doubtlessly is signified, that the woman is in that condition and time, that she should both carefully look to herself, and that she stood in the greatest need of the attention of others.

Speaking of the adages in use among the Laplanders, I cannot pass by unnoticed an expression familiar to the Norwegian peasants inhabiting Finmark, and chiefly made use of when they profess to lament the condition and misfortunes of others; and if he may be a person of very distinguished rank and of very ample fortune, and of the greatest dignity, whose fall they lament, yet do they not hesitate to testify their grief for him in these words: *Beiste staffar*, that is; poor beast! by which expression, though

founding

ſounding extremely harſh and full of ruſticity, yet they mean to expreſs how much they are affected and moved by his unhappy lot and condition.

CHAP. III.—*Of the Genius of the Laplanders; their Virtues and Vices.*

THE children of the Laplanders are very brawny in the face, as well as in other parts of the body, yet this brawniness decreaſes with their years. The nation in general is of a dark and ſwarthy complexion, ſhort hair, large mouth, hollow cheeks, long chin, wateriſh eyes, the defluxion of which is partly to be aſcribed to the nature of their climate, partly to the exceſſive ſmoke with which they are infeſted in their tents and huts, partly to the ſnow which drifts itſelf into the eyes of travellers, who paſs the mountains about the tempeſtuous ſeaſon of their winter; and partly to be aſcribed to their looking on entire plains and mountains whitened with ſnow, whence it ſeldom happens, on their returning from hunting the rein-deer, that they are not almoſt deprived of the uſe of ſight for, at leaſt, ſome days.

It has been related to us by certain writers, but of no authority, that the Laplanders had coarſe rough ſkins like wild beaſts. Another writer alſo of weak credit, has not ſcrupled to aſſert, that the Laplanders had but one eye, and that placed in the centre of the forehead. Opinions, which with other ridiculous fables, are moſt properly exploded. There are others too who do not heſitate to affirm, that a certain ſtrong ſmell is naturally in the Laplanders; and to this aſſertion, though avowedly falſe, ſome have incautiouſly given their belief. I, on my part, do not deny, that the Laplanders ſmell very ſtrong, but this very ſtrong ſmell I do not aſſign to the nature of them more than to that of other men: when it is obviouſly clear, that that ſmell is produced from no other cauſe but from the clothing of this people, ſtained and greaſed through by the conſtant ſmoke of their huts, and by the oil ſqueezed from the fat of fiſh.

The generality of the Laplanders is ſhort of ſtature, but of amazing ſtrength. A hardy race, capable of fatigue and cold, beyond the belief of any man; in confirmation of which I ſhall deem it ſufficient to relate that, when I was curate at Alten in the Weſtern Finmark, a certain Lapland woman, on the fifth day after her lying-in, about Chriſtmas, travelled over thoſe mountains covered with a conſtant ſnow, to me, begging that I would introduce her duly and after the forms of our rites into our church. The Highland Laplanders can bear the greateſt extremity of cold; and the maritime along the coaſt, the moſt intolerable heat, which, in their huts, (owing to the fire having no vent, the duct through which the ſmoke ſhould paſs being cloſed up,) burns them almoſt to death.

And as the Laplanders, by their own nature and habits, are hardy and laborious, ſo even, as we obſerved, vulgar medicines and thoſe elſewhere of no repute, are ſufficient to repel diſeaſes and reſtore health. Though the tribe of doctors may laugh, yet it is ſo; and the experience of many years, experience that does not deceive, has confirmed it. For all-powerful and beneficent Nature has ſo providently and wiſely ordained all things, that what is of no account and common in the opinion of ſome men, can furniſh the moſt eſſential benefit to the indigent and afflicted in thoſe places, where more coſtly and excellent medicines are not to be had. And for this reaſon, nothing is more acceptable, nothing more agreeable can happen to a Laplander, than for any perſon to make him a preſent of a ſmall bit of the root of nicotian, or a few grains of pepper, or ſome ſuch trifling thing.

They are furniſhed with an amazing and extraordinary agility of body, for a very great number of them can be compacted into the ſmalleſt ſpace, and one man brought ſo cloſe upon another, by means of his feet being placed with art under his ſeat, ſo that all may ſit down cloſely and compactly together.

They travel over the very higheſt mountains by the ſwifteſt ſpeed, and faſter than thought. By a certain wooden machine, of an oblong figure, faſtened to their feet, commonly called wooden ſcandals, they are carried with ſuch rapidity over the higheſt mountains, through the ſteepeſt hills, making no uſe of a ſtaff, which in the midſt of their courſe, they hang careleſsly and negligently from their ſhoulder, that the winds whiz about their ears, and their hair ſtands an end. Yet, notwithſtanding the celerity of their courſe, ſhould you throw a ball, or any thing elſe before the runner, in the midſt of his ſpeed, inclining his body, he inſtantly overtakes it and picks it up. Infants can no ſooner walk, than they make for the hills, and there on foot, after they have put on their ſandals, are borne through the declivities; to this exerciſe, from their earlieſt years, they are accuſtomed.

By their rein-deer, they are borne with an incredible velocity, not only over plains, and open fields, but up acclivities and precipices of mountains, and while driving, ſhift the reins with ſuch readineſs from ſide to ſide of the animal, as ſcarcely to be perceived. Thoſe who inhabit the ſea coaſt, know the management of boats to ſuch a degree of dexterity, that they would not yield to the beſt and moſt experienced ſeamen in this art. This great agility of body, in my opinion is partly natural to this people, and partly acquired, by the frequent conſumption of oil, which is got from the fat of the fiſh, to which from their very cradle they are accuſtomed.

In wood and horn they have the art of forming, with a common utenſil, by the inhabitants named (*Taelle Kniv*) various figures, and with a certain natural ſagacity. Hence a variety of vaſes, bowls, cups, &c., are made. They faſhion their own vehicles, the parts of which are ſo well adapted to each other, ſo nicely fitted, as ſcarcely to ſuffer a drop of water to paſs through them; they make too from horns, ſpoons, ornamented with various reſemblances of wreaths and flowers. See Chapter XIV., concerning the workmanſhip of the Laplanders.

Among the women, are alſo found ſome who are not ignorant of the turning-art, or the art of chiſſeling. But the ingenuity of this ſex principally is exerted in ſewing together belts, and making purſes, with tin filiments interwoven in them. As they are alſo very ſkilful in throwing the javelin, they formerly made uſe of the bow and arrow, now they uſe muſkets and bullets, with which they kill birds and beaſts. The invention of the ſaid Peter Nicolaus, of whom further in Chapter XVII. concerning ſports, &c., &c., there is a full account of the Laplanders, in which it has been laid down and argued, how much they excel in the art of throwing the javelin.

Among the virtues of the Laplanders, the knowledge of the true God, deſervedly holds the firſt place, which they have obtained to, in no ſmall or idle degree.

Before the government of the auguſt Frederic IV., the Laplanders were inveloped in more than common darkneſs. He, in addition to his other regal and glorious inſtitutions, for promoting the converſion of mankind, by which this moſt worthy prince acquired for himſelf immortal praiſe, inſtituted a miſſion continued and promoted by his ſon Chriſtian the VI., his grandſon Frederic the V., and his great grandſon Chriſtian the VII. our lord and king, with the ſame happy auſpices of the Divine Being, and the glory of his name, and the true felicity of the ſubjects of his realm, and with a zeal, for which we can never return due praiſe, but by imploring the Divine goodneſs to

bleſs and ſhower on his reign continued proſperity. For to ſay nothing of this ſtate of darkneſs in the religious adoration of idols, formerly celebrated in this nation, with the greateſt ſuperſtition, almoſt all were ignorant, or had very little knowledge of the divine eſſence, of the benefit, and of the will of the true God, united in the bleſſed Trinity. The knowledge of the letters of the alphabet was one of the diſtinctions of learning, and he who knew them was conſidered as eminently learned. As an example of the hardened ignorance, under which this miſerable nation then laboured, I ſhall juſt mention, that when a Laplander from the bay of Porſanger was aſked the manner in which Chriſt aſcended into heaven, he anſwered, on two ſtones of marble. The poor miſerable fellow happened to hear ſomething of the tables of the decalogue of Mount Sinai, but what they referred to he was ignorant.

But thoſe times of ignorance, praiſe be to God, the father of knowledge, and to his auguſt race of kings, who have ſo powerfully and happily diſpelled it, have paſſed away; and the Laplanders enlightened by the holy doctrines of the Evangeliſts, are willing and ready either with, or even without book, by the aid of memory alone, to anſwer all, who inquire on the reaſonableneſs of hope, to the utmoſt of their ability. In the tract, in which my miſſion is deſcribed, not a few are to be found who faithfully retained in memory, the whole catechiſm, a portion of the hiſtory of the paſſion of Jeſus Chriſt, with ſome of the Pſalms of David. There was one who could recite thirty-ſix whole pſalms from memory; and what may excite admiration, an old man of the name of *Niels Kiſtrand*, whom the Laplanders in their common language called *Nikke Kokko-gedde*, (*Niels* they expreſs by *Nikke*, and the place where he lives, the Norwegians by *Kiſtrand*, they call *Kokke-gedde*,) above ſeventy, learned by heart the firſt three parts of the catechiſm, when he never knew the form of the alphabet, nor till then, had ever learned any thing by memory. It is now thirty-eight years ſince I was miſſionary among the Laplanders; after ſo great a lapſe of time, a faithful diſcharge of the duties of a miniſter of the word of God does not leave me to doubt; when accompanied with ſo large a portion of Divine goodneſs, but a much greater progreſs in the ſalutary knowledge of the true God is made, eſpecially when the miſſionaries ſhall have acquired a knowledge of the language of that nation, which, by all means ſhould be done, if they mean to undertake for the happineſs and advantage of the Laplanders their religious inſtruction. If they do not, the miſerable men, to whom they preach, will hear nothing but empty ſound and unmeaning words. For what numbers, among the Laplanders, eſpecially of the female ſex, are found, who do not underſtand a ſingle word of common Norwegian language. And the moſt of the men, eſpecially ſuch as live along the coaſt, can manage from daily intercourſe and habit with the Norwegians, the inhabitants of this region, their domeſtic and ſecular affairs on a manner in Daniſh, or Norwegian; yet it by no means follows, that they ſhould ſucceed in ſacred things, and that they therefore comprehend and turn to their benefit the Divine truths, delivered in ſermons, in catechetical inſtitutions in the Daniſh, as they would in their own vernacular language. And hence the people themſelves freely and ſenſibly confeſs, that they draw much greater inſtruction from diſcourſes and catechiſms in the Lapland language, and that they are more agreeably and more ſtrongly affected than they are by thoſe diſcourſes which are compoſed in the Daniſh.

Whilſt among the Laplanders in the office of miſſionary, it was a cuſtom with me, to preach and examine them in the Lapland language; at the ſame time I gave them chapters of the Evangeliſts to be learned, explaining to them alſo hymns, that were to be ſung in ſtated prayers, morning and evening on the Lord's day in the ſaid language. Afterwards, by the appointment, and indulgence of my moſt potent ſovereign, being preferred

preferred to the office of paſtor of a congregation of Alten, in the Weſtern Finmark, which was made up of Norwegian, Lapland, and Swediſh auditors, I preached one time in Daniſh, at another in Lapland, juſt as the audience ſeemed to require, addreſſing the Laplander and the Norwegian, each in his own peculiar language. The offices of abſolution, bethrothings, nuptials, the introduction of women after child bearing, I adminiſtered to the Laplanders always in their own peculiar language.

And as the Laplanders, as already obſerved, have made no inconſiderable progreſs in the knowledge of religion, ſo do they hold it in the greateſt veneration. For notwithſtanding the public performance of ſinging, of preaching, and examination, can ſeldom be finiſhed in leſs than three hours, yet all of them, ſhould the cold be as intenſe as poſſible, ſit attentive, in tents, rent and full of chinks, bare-headed, in the deepeſt devotion, ſilence, and veneration, liſtening to the word of God.

They hold in the higheſt honor and veneration the profeſſors of religion. They receive their doctor or divine inſtructor with reverence and great affection, addreſſing him *Buorre Atzhie*, that is, good father; they riſe to him and aſſign the moſt honorable place in the inn. They place before him the moſt coſtly and excellent things they have; as the milk of the rein-deer, hardened into a conſiſtence; cheeſe, fleſh, the tongue and marrow of the ſaid animal. They return their beſt thanks for any religious office he performs among them, making uſe of this form, *Kütos ednak ibmel ſaneſt*; that is, thanks for the word of God.

A great many, even in the abſence of the miſſionary, though on their journey, do not neglect a ſolemn attention to prayer, morning and evening. There are ſome alſo, who at private devotion inſtruct their children and the reſt of the family. Nor is it ſufficient for them, merely to have learned faithfully the word of God, unleſs they alſo exemplify the force and efficacy of it in a life worthy of a chriſtian. And hence it is, that no oath, no curſe is ever heard among them, but rather the indignation of the Norwegians, execrating thoſe addicted to this crime. Their holy ſabbaths ſeldom or ever do they violate, they are naturally mild in temper, and very fond of peace, ſo as even hardly ever to come to words and blows. Moſt continent too in their habits, for during the ſpace of four years, that I diſcharged the duty of miſſionary among the Laplanders of the pariſhes of *Kiöllefiord* and *Kielvig*, not a ſingle child was born out of wedlock; and for the whole ſix years of my office at Alten, only one. They refrain with modeſty from the marriage of relations; theft is very rarely committed among them. During the whole of my time engaged as miſſionary among them, I never loſt the leaſt thing, but every thing remained without lock and key, packed and untouched. It is a habit with them, not to touch a crumb of food, without devoutly bleſſing it firſt in this form, *Jeſuſatzh ſivned*, that is, O Jeſus ſanctify!

It is much to the praiſe of the Lapland nation, that ſtrolling beggars are very ſeldom ſeen there. Each pauper keeps himſelf in his own hut, to be examined and ſupported by the other inhabitants of the pariſh: when in the other parts of Norway, and where you would expect better proviſion from the law in the management of paupers, you find vagrants of this ſort, and ſometimes in herds together.

The Laplanders, like the reſt of mankind, have their faults, but they are few, and ſeldom occur; among which I name drunkenneſs, to which ſome are addicted, and fraud in their dealings, which the following inſtance ſhews: In the ſpring of the year there are found in the rein-deer little worms between the ſkin, ſhort but thick, called *gnormak*, which gnaw into and perforate the hide of the animal; and hence it ariſes that the hides of rein-deer killed about the ſpring, vitiated by the ſaid worms, yield much in value and price to the hides of the ſame animal killed in the ſummer or autumn. To remedy

remedy this defect, and to prevail on the purchaſer, the diſhoneſt Laplander, in order to conceal it, cunningly covers over the little holes in the hide that is eaten through.

CHAP. IV.—*Of the Clothing of the Laplanders.*

A CERTAIN writer has related to us, that the Laplanders wore cloathing of gold and ſilver ornaments. Another writer, of no better faith, confidently aſſerts, that their apparel conſiſted of the ſkins of ſea-calves and bears, and that the whole body was covered over from head to heel as with a ſack. A third writer has left it upon record, that the women of this nation wear ornaments made from the dried entrails of wild beaſts; which accounts, from their very air of romance, refute themſelves.

The men wear on their heads tall caps, not unlike a ſugar-loaf. Great numbers of this ſort are made out of red cloth, called *Kerſey*, conſiſting of four parts or ſegments, broad at bottom, but narrowing to a point at top. On every hem where there is a joining, a very thin ſlip of cloth, kerſey, of a yellow colour, is ſeen in ſuch a manner, that the beholder thinks he ſees four yellow fillets, from the loweſt rim of the cap to its top: on the top of which is diſplayed a creſt made from pieces of party-coloured cloth, with a bordering from the ſkin of the otter, drawn about the lower part.

In ſome caps the ſaid bordering before and behind has a narrow form, which kind of covering, *Niudne Kapperak*, a covering for the noſe, is ſo named in the Lapland language. I remember once to have ſeen a poor Laplander with a cap made from the dreſſed ſkin of a ſalmon; it was well nigh white coloured, marked with ſquares, reſembling ſcales of fiſh, which had been thrown off.

The cap in which the men go hunting, or wear in paſturing their tame rein-deer, is called *Rivok*. A ſmall aperture is in the front, but the breaſt, ſhoulders, and part of the back is covered by it; neither is it faſtened over the boſom by belt, button, or any other ligature, but fits cloſe. In the front of the cap is a plate or covering, in Lapland called *Zhialbme-raſt*.

Cravats are very ſeldom worn by the men, and if worn, ſo ſcanty and ſhort are they, that they come round the neck but once; and this is the reaſon why the neck is uſually expoſed naked, and without covering, to the inclemency of their cold.

The tunic, or inner garment of the Laplander, called *Tork*, is made of ſheep ſkin, neither ſheared nor dreſſed, the hairy part being turned in. On the upper part of the tunic is a ſtiff high collar, made from kerſey, or ſome other cloth, artificially variegated with party-coloured threads. The tunic, as the ſhirt, is downwards, an entire and continued piece, but upwards open, where it covers the breaſt, and if made after the faſhion and condition of the nation, is rather elegant and coſtly; a bordering goes round that opening of *kerſey*, or ſome ſuch cloth, the edge of which is trimmed with a fillet made from the ſkin of the otter. On the left ſide are ſlender bandages; but the right is ornamented, eſpecially in the women's garments, with gold and ſilver taſſels. Their ſleeves, in like manner, have this edging to them, made from kerſey, or ſome ſuch cloth, on the extremity of which is a fillet from the ſkin of the otter. The loweſt border is tacked round with a fringe from the ſame cloth as the fringes on the boſom and on the ſleeves; and as the hairy ſide is always turned in, as obſerved, it follows that the hair is every where ſeen to hang below the extremities of their garments.

Shirts are very little worn either by the Laplanders; but the tunic or inner garment, juſt now deſcribed, is next to the body, and ſupplies the place of the ſhirt.

Cloaks, which the men wear, are made either from thick cloth, commonly called *Badmel*, or from kerſey, or of the hides of their full-grown rein-deer, or from the young of the ſame animal, of a grey colour. Cloaks from the cloth *badmel* are in Lapland called *Gagges-Kaſte;* which alſo as the tunics, of which I made mention, are made with a ſtiff collar, covering the whole neck to the ſhoulders, ornamented with a variety of coloured threads, for the diſtinction of the wearer. And as the tunic, made from ſheep ſkin, in the form of a ſhirt, is entire from below, and open in the boſom, and trimmed with kerſey or ſome ſuch cloth, it does not agree with the cloak in the ſame manner. Over each ſhoulder a ſlip of cloth, which is either plain or party-coloured, of *kerſey*, or ſome other cloth of a varied colour. The lower extremity is embelliſhed with a fringe, adorned and diverſified with threads of different colours, called in Lapland *Luſkuldac*. Under the neck is a button, to cloſe the aperture of the cloak. Cloaks of *kerſey*, or made even of other cloth, are called *Kerſey-Kafte* and *Ladde-Kafte*, in the Lapland language.

Garments of this kind, like the cloak juſt mentioned, are made from a very coarſe cloth, called *Badmel;* but if entire from the loweſt part, open in the breaſt, with a very narrow fringe coming round that aperture, they are finiſhed with *kerſey*, or with ſome other cloth different from the colour of the cloak: ſuch like trimmings come round the ſleeves, and a ſtiff collar about the neck, variegated with a twiſted thread. A border is thrown round the ſhoulders, of a colour different from the reſt of the garment. A fringe ornaments the lower extremity, of a colour different from the garment; ſo that if the cloak is of a red colour, the colour of the border is yellow, white, or green: under the neck is a button which cloſes the opening. In their cloaks and breeches they have, like other nations, no pockets; in the room of which they carry in their boſom a little leathern bag, called *Nivſak-Gierdo*, where they put up a tinder-box, which they are never without, and other commodities, of which they make daily uſe.

In Finmark the cold, which is the moſt ſevere imaginable, prevails in winter; for, to paſs over other inſtances, it will be to my purpoſe to mention that the lakes and rivers are ſo frozen up with cold, that the ice has been known to increaſe two ells and a half in thickneſs. It is not undeſerving of note, that ice of itſelf is more condenſed by the cold than when covered with ſnow; for from the incumbent height of it, it is kept, as it were, from its attack, and defended againſt the inclemency of cold. To this pervading and almoſt unuſually felt degree of coldneſs, is to be aſcribed the reaſon of the inhabitants of Finmark cloathing themſelves with the ſkins of beaſts.

The cloak made from the ſkin of the rein-deer when grown, is called in Lapland *Paeſk*. It is made from the ſkin of the female, which the Norwegians call *Simle*, the ſhaggy ſide being turned out, which gives the cloak a horrid and unſightly look. This kind of garment is not as others open at the boſom, but like a veil, entire and of a piece nearly to the neck. About the neck is a border made from the ſhaggy part of the hide, which the Laplanders call *Paeſk-Lok*. Beſides, a pair of ribbands hang down, on the extremity of which is a ſmall taſſel made up from ſmall ſhreds of different cloths, cut very ſmall into very little pieces: the ribbands ſerve for the purpoſe of lightening the cloak. It is ornamented too, as the above garments, with a high collar, mounting up to the ears, made out of the undreſſed hide of the rein-deer, as is the cloak itſelf. This the Laplanders uſe as a mantle; for if on their maritime excurſions, as it frequently happens, they ſhould be ſprinkled with the brine of the ſea, when they come on ſhore they roll themſelves inſtantly in the ſnow, that the ſalts, ſo injurious to the garment, may by this means be extracted.

The mountain Laplander, for his comfort, and for keeping off the cold on his journey,

Engraved by George Cooke.

Laplanders.

Magical Drum.

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ney, uſually wears a muffler about his neck, made out of the ſkin of a young fox, duly obſerving that the tail hangs from his neck on his ſhoulders. The Swediſh merchants, when they have to travel over the mountains, in like manner cover round the neck with the ſkin of a martin, in order to keep off the cold; and that nothing ſhould be wanting to it, they uſually fill up the crevices made in it by the eyes taken out, by new ones caſt from ſilver. The cloak which is made from the hide of the rein-deer when young, the Laplanders call *Moedda*, faſhioned according to the model of the aforeſaid cloak, with this difference, that it has fringes to the ſleeves, and it is trimmed below with the ſkin of a black dog. The furred garments which the Lapland women make to ſell to perſons of honourable condition, are made from the ſkins of young rein-deer, of a grey colour, and are open at the boſom and on each ſide, with ſleeves ornamented with fringes from the ſkins of otters. A high collar is tacked to them, fringed alſo with the otter's ſkin. At the bottom is conſtantly a border, the hem of which is a very narrow ſelvedge of black dog ſkin ornamented. On each ſide of the lower border is ſeen a fillet, in the form of a wedge. But it is to be noticed, that each border of cloth before the breaſt, about the neck, or in whatever part of the garment it is placed, is ornamented and diverſified with twiſted threads of tin, drawn in a variety of forms and figures, as the taſte of the purchaſer may require.

The men ſometimes make uſe of leather gloves, called *Rappukak*. They are moſt uſually made from the ſkin that is ſtripped from the feet of the young rein-deer, the ſhaggy part being turned outſide; and for the better defence againſt the cold, they put in them hay or long ſtraw, called *Sueinek*. The Lapland women make up theſe gloves for perſons of condition, which are made at the deſire of the purchaſer; that the part of the glove which covers the hand itſelf ſhould be of the ſkin from the feet of the rein-deer, or of the black fox, with the hairy part put outſide. That the ſleeve, which covers the wriſt, with part of the arm, ſhould be finiſhed with cloth, of variegated threads of tin, and trimmed with otter's ſkin. There are among the Laplanders men as well as women who have the cuſtom of wearing bracelets of mountain-trap, which from a vain ſuperſtition they uſe as a charm againſt pains of the joints.

The men never wear ſtockings, but breeches or pantaloons, which fit the legs cloſely and compactly, going from the hip to the ancles. Breeches of this ſort are made from cloth *Badmel*, or from the cloth *Kerſey*, or from the dreſſed leather of animals, or laſtly from the hide and the ſkin from the feet of the rein-deer together. Thoſe made from coarſe cloth, *Badmel*, the Laplanders call *Gagges-Buſak*. Breeches made of cloth *Kerſey*, that they ſhould laſt longer, they uſually ſtrengthen before the knees with a leather guard. Thoſe made of dreſſed leather are called *Siſtekak*, uſed principally on maritime buſineſs. Thoſe made up of hide and ſkin taken from the feet of the rein-deer, are called *Kamas-Buſak*. The upper part of theſe is made of hide alone, the lower coming from the hip to the ancles, of the ſkin from the feet of the rein-deer. Theſe are uſually worn on journies by land, yet in ſuch a manner, that they may be drawn over other breeches next to the body, made from cloth of *Badmel*, or others made of coarſe cloth.

The Laplanders fix but one ſole to their ſhoes; and the ſhoes of ſome men are ſo made, as to conſiſt of the hide taken from the ſkull of the rein-deer for a ſole, and that which comes from the feet of this animal for the upper-leather and latchets. The ſhoe of this kind is called *Gallokak*, covered over with hair, and very much in uſe among the mountaineers. And as theſe ſhoes are on every ſide ſhaggy, it is plain that they are ſmooth and ſlippery; and for this reaſon the ends of the hair on ſhoes which boys wear are ſinged, leſt walking on the ice with a tottering ſtep, they may to their danger tumble

down. Some ſhoes have ſoles from the ſkin of the ſeal, the upper and other parts being made from dreſſed leather, or ſomething elſe of a ſoft pliant nature. There are ſome alſo made from the hide alone, yet in ſuch a manner, that the ſoles are of a leather thicker than the other parts, and this kind is called *Zhiazekak*. In ſome the ſoles are of the undreſſed hide of the cow, the hair being all outſide, the upper-leather and latchet being either from tanned ſkins, or ſoft pliant leather. This third kind is very much in uſe among the ſeafaring people. The Laplanders faſten their ſhoes neither with button nor latchet, but putting them on, tie them round the calf of the leg with a thong of leather, or a twiſted cord. It is a cuſtom among them to put in hay or bulruſhes to their ſhoes, that they may retain the warmth the better; and ſince the breeches in uſe among that nation do not come below the ancles, it follows that the reſt of the foot is thruſt naked into the ſhoes. The ſtraw too put in is placed about the ſhoes, and at evening when taken off, is taken out to be dried by the fire, that the moiſture may be taken out: in the morning, when they are to be put on, the ſtraw is again put in, which when worn out with long ſervice is at laſt rejected, and other ſtraw, freſh and ſound, put in its place.

The women make up boots for ſale, which, at the will of the purchaſer, are ſo made that the ſoles, the upper-leather, and latchets, taken from the hide, the feet of the reindeer, with the ſhaggy ſide turned outward; but the other parts, which cover the ſoles of the feet, the hams, and knees, conſiſt of cloth ornamented and diverſified with threads of tin: they are faſtened above the knee with a leather thong, on the end of which hangs a ſmall taſſel made from ſhort ſhreds of cloth. Boots of this kind, which the inhabitants call *Sæpokak*, end in a crooked and ſharpened beak.

The belts which the men gird themſelves with are leather, and ſet with tin. From the fore part is hung a purſe, reſembling a little ſatchel. In this purſe they put up their tobacco, take it out in ſmall parts, put it in their mouth and chew it. On the other ſide is hung a variety of leather thongs, ornamented with tin, tin-taſſels, keys, and ſuch things. There is appended to the belt beſides, a knife in a ſheath, and a variety of rings hanging by a leather thong. The women make up theſe belts for ſale out of cloth, the outſide of which is ornamented with tin; the inner is underlaid with leather.

The Cloathing of Women.

THE Lapland women moſt uſually wear linen caps, ſeldom woollen. The woollen caps are made of kerſey, or ſome ſuch cloth, and conſiſt of two pieces, one of which reaching to the neck, covers the hinder part and crown of the head, the other part the temples and the reſt of it. Along the edge of the ſewing, where theſe parts are joined, a bandage of kerſey, or of yellow cloth, is placed. The loweſt end of the cap is ornamented with a fillet of gold, or counterfeit ſilver, or ſome other ſhining bandage, or with a ſtrip of cloth of a different colour from the cap itſelf, which is bound round with ribbands, with gold or counterfeit ſilver, which make a very ſhining appearance. I remember to have ſeen a poor woman with one that was bound with a bandage made of the dreſſed ſkin of a ſalmon, of a colour almoſt white, in every other reſpect like the ribbands juſt mentioned. The caps of linen do not differ from woollen but in the trimmings; theſe being trimmed with ribbands and a bandage of cloth, whereas the linen are ornamented with more elegant fringes.

The Lapland woman, before ſhe puts on her cap, rolls up a certain round ball on the crown of the head, and draws it together under the ball with a thong, by which ſhe gives an appearance to her head covering not unlike the women of Amager in Zeeland, and of Opdal in Norway. Concerning the hood, or that covering for the head which

women, either intent on a journey, or occupied in keeping the rein-deer by night, make uſe of, theſe obſervations occur: they put on a certain kind of covering which reaches from the upper part of it to the neck or chin; but from the lower is ſtretched over part of the breaſt, of the arms and back. This kind of covering is faſtened by no buttons or ribbands, as being on each ſide entire and fitting; it is generally made up of red, green, or blue cloth *kerſey*, adorned at the lower part with a border of cloth of a colour different from the hood itſelf. When they have put on this ſort of covering, they place a high hood on their head, which riſes broad in the ſhape of a crown, being ſpread out in the upper part of it. Below, along the left ſide, is a ſelvedge of cloth, of a different colour from the hood; and ſuch as mean to ſurpaſs others in dreſs, make uſe of a bandage inſtead of the ſelvedge, made up of gold and counterfeit ſilver, from which a gilt ſilver button is pendent. Men as well as women wear tunics and cloaks. The tunics are made from the dreſſed ſkins of ſheep, reſembling the tunics of men, except that behind they fall into a variety of folds, lie cloſer about the breaſt, and are longer; for they come down to the hams, when thoſe of the men come only as far as the knees. And as the tunics of ſheep ſkin ſerve the men inſtead of ſhirts, ſo women make uſe of no other covering than tunics of this kind, made from the unſhorn ſkins of the ſheep, with the ſhaggy part turned inſide. The outward garment of the women, made of *badmel*, *kerſey*, or any other cloth, is like the cloaks of men in almoſt every particular, with theſe few exceptions: the men's come but to the knees, the women's to the hams; the men's are ornamented with a ſtiff collar, the women wear none. The tunics of women, made of ſheep ſkins, have a ſtiff collar, reaching over the ears and neck; which cloaks, made of cloth *Badmel*, have not, as juſt mentioned, and which when worn leave the neck above the tunic expoſed. Among the women there is alſo a certain kind of cloak in uſe, called *Barve*, made of kerſey, or ſome other common kind of cloth; but in this differing from others, that it is not entire from the head to the ancles, but cut and ſewn again about the belly, and drawn into folds. The cloaks of women made up from the ſkins of rein-deer, or from their young, differ only in form from the men's; that as theſe come down to the ancles, whereas the men's reach but to the knees.

The gloves of women agree in ſhape with thoſe of the men; thoſe who are deſirous of ornament and elegance have hairy gloves of a very white colour, made from the ſkin taken from the feet of the white rein-deer, and ornamented on the outſide with variegated ſhreds of a different cloth. And, as the men wear breeches made of cloth, *Kerſey*, or of ſome other ſort, or ſkin taken from the feet of the rein-deer, the hairy part being turned outſide, from dreſſed ſkins or leather, ſo the women wear them, yet they are very ſeldom made of leather, but in every other reſpect they are like the men's. The ſhoes of the men and women only differ, that as the ſoles of men's ſhoes are made of the ſkin which is taken from the ſkull of the rein-deer, but the upper part and latchets from the feet of the ſaid animal, ſo the women's are made up entirely from the ſkin from the legs of the rein-deer. Thoſe who wiſh to be diſtinguiſhed among the mountaineers have ſhoes covered with hair of a white colour, from the ſkins which are taken from the feet of the white rein-deer. The girdles of the women are of leather, or ſometimes of cloth, covered on every ſide with tin plates; under the girdle is ſeen a button of a larger ſize, made of mountain-trap from which ſome rings of the ſame metal for ornament and elegance are hung. Women of condition wear ſilver girdles. Handkerchiefs, with which the women ornament their necks, are either of ſtamped linen of Ruſſia, or of coloured linen, which is vulgarly called in taverns *Cattun;* or of common white linen, a covering of which ſpread over the cloak extends over the ſhoulders and breaſt. The aprons of the women are narrow, made from the ſtamped linen of

Ruſſia, or linen Cattun, or of the white common linen, of which the handkerchief juſt mentioned was made. Such as are white, are ornamented with fringes of a more elegant texture.

The women of Ruſſian Lapland wear ſilver ear-rings; ſometimes ſilver chains coming round the neck, and appending to the ears. As the cloaks of each ſex in ſhape differ ſo little from one another, it does not rarely happen, a circumſtance of which I have been a credible eye-witneſs, that the huſband, without knowing it, puts on the cloak of his wife, as ſhe does in the ſame manner the cloak of her huſband.

All clothing of this kind, male as well as female, ſuch as furred garments, gloves, ſhoes of leather, &c. are made by women alone; as, on the other hand, the men are employed in the occupation of women in preparing food and refreſhment.

CHAP. V.—*Of the Habitations of the Laplanders.*

THE hut of a maritime Laplander is called *Laume-Guatte;* it is built within of timber ſet upright, and without of the bark of the birch-tree, thatched over with turf. Of theſe beams four are thicker, called in Lapland *Baeljek*, bent, and are the principal beams that ſuſtain the bulk of the building. A pair are fixed on each ſide of the hut, driven at one extremity into the earth, but at the other, towards the gutter, which is always in the middle of the building, upright. When they are faſtened in the ground, they are diſtant from each other by a ſmall interval, but gradually riſing, they keep inclining to join again near the brink of the gutter. Hence the ſaid four beams or *Baeljek*, raiſed in a curved manner, reſemble a pair of arches within. Beſides thoſe four thick beams uſed in erecting and conſolidating the hut of a maritime Laplander, other four curved rafters, called in Lapland, *Zhianmek*, are erected with them. A pair of theſe ſeparated by a ſmall ſpace in the building, in the inner part of the hut, and a pair alſo near the door, are ſet up: they are faſtened in the ground at one extremity, but towards the top, arching gradually, they riſe towards the gutter of the building.

Between the ſaid beams ſo often mentioned, *Baeljek*, erected on each ſide of the hut, and between the four others deſcribed, *Zhiaumek*, placed in the interior part, near the door, which, as I have juſt now ſaid, are at a ſmall diſtance aſunder, little beams, or broad pieces of wood are lodged, as well within near the floor, as above towards the roof, whence it is eaſily underſtood, that when the four Baeljek, and as many Zhiaumek riſe archways from the ground to the gutter, and that the little beams, or broad pieces of wood fitly correſpond in ſituation with the larger timber of the building, the hut reſembles, on the inſide, a ſmall arch, from the ground to the gutter. This arch, which the hut of the maritime Laplander forms on the inſide, is ſo low that you cannot ſtand upright, but before the fire, juſt under the gutter, where the hut is higheſt; for, if you incline but a little to the ſides of the building, your body muſt neceſſarily be bent. Where the arch touches the ground, there too are the ſeats in the hut of a maritime Laplander, for ſo ſunk and low is it that you muſt ſit on the very ground itſelf. The hut, when entirely built and the timber laid in order, is floored within, and to this flooring the beams are faſtened with nails. In the hut of the maritime Laplander, near the door, are laid on each ſide ſome ſmooth ſtones, in Lapland, *Juoudok*. The floor of the hut is uſually round like a circle with branches of trees on the levelled earth, every where paved, except in the middle where the fire-place is.

The fire-place itſelf conſiſts of rough ſtones, in a double row, negligently piled on the bare ground, from the door to that part of the building moſt fitted for it, in which incloſure

Inside of a Hat & Dress of the Laplanders.

inclosure a fire is made. Near each end of the fire two columns are erected of a moderate thickneſs, with one end in the ground, and with the other raiſed up to the gutter. On theſe two columns two beams, in Lapland, called *Balkok*, are lodged, on which other poles are laid acroſs, from which are hung wooden hooks, that hold up pots and kettles on the fire.

Whilſt the fire is burning on the hearth, a certain ventilator is provided in the houſe, near the gutter, with this view, leſt, while the ſmoke is aſcending through the gutter, the wind, blowing with greater violence, it ſhould be ſtopped. The ventilator itſelf is applied to that ſide of the gutter which is towards the wind, ſo that if the wind riſes in the north, the ventilator is erected on that ſide of the gutter.

The maritime Laplanders, before they go to bed, extinguiſh all the logs, which are moved from the hearth by means of a ſtick filled for that purpoſe with cold water. Then, letting out all the ſmoke, they climb up to the roof by means of rafters, named in Lapland *Tappaldagak*, to ſhut the gutter. At that end of the fire-place which is oppoſite the door, are placed two trunks of the birch-tree, an ell aſunder from each other. Thoſe form on the floor of the cottage not far from the door, a long but narrow ſpace, where, whenever the fire is to be lighted, pieces of wood are to be put, which conſiſt of trunks and branches from trees freſh cut. Here too the gueſt or ſtranger muſt ſtand who ſhelters himſelf under their hut, until the father himſelf of the family, or ſome other member of it, invites him to a nearer approach.

Near the other end of the fire-place, looking towards the interior ſide of the cottage, oppoſite to the gate, are placed likewiſe two trunks of the birch-tree, on branches at the exact diſtance of an ell from each other; which, as the former juſt mentioned, make a long but narrow ſpace, where kettles, plates, and other utenſils of this ſort are placed. Here is affixed a brazen veſſel filled with ſnow water, where the Laplanders, whenever need or inclination calls them, quench their thirſt.

From what has hitherto been ſtated, it is eaſily collected, that, from the outſide door to the inner ſide of the hut, things preſent themſelves in this order: firſt, not far from the entrance, between two logs of the birch-tree, laid on branches, is a ſpace or certain limited dimenſion; then the fire-place, which is raiſed in the middle of the floor, from rough ſtones ranged in two heaps; and next is another ſpace or diviſion near the interior-corner of the hut, made like the firſt. On each ſide of the fire-place, and of the ſaid ſpaces, are two beams on boughs with which the floor is covered, at the diſtance of two ells from one another, reaching by one end to the fire, by the other to the wall. Theſe beams form three ſpaces or meaſures on each ſide, one near the door at the ſides of the birch trunks, where the wood for firing is placed; another in the middle of the hut near the ſides of the fire-place, and a third at the ſides of thoſe trunks, where their kettles, diſhes, &c. &c. are kept. In any one of the ſaid ſpaces or diviſions the hide of a rein-deer is ſpread along the floor, leſt the ſtrewed branches of the trees ſhould incommode them too much either when they ſit or lie down. The hut is inhabited but by one family, the father of the family and his wife occupy the one ſide for themſelves with its three diviſions, leaving the other to the children and ſervants. But if there are two families, each has its ſide with all the diviſions belonging to it, ſo that the one father of the family is placed in the inward diviſion of the ſide he has got, which is the moſt honourable in the hut, and is called *Boſhio-Kiaezhie*, the children in the middle, called *Gaſk-Loido*, and the ſervants in that which is the next to the door, and is the worſt of all, called in Lapland *Urſa-Kiaezhie*. The other father of the family diſpoſes in the ſame manner as the former, the part of the hut which he has duly obtained, aſſigning to each member of the family its own peculiar portion of it.

He

He who has obtained the inward or more honoured part of the habitation in the hut, on the arrival of a miſſionary, comes out, together with his family, and moſt willingly gives up the place to his welcomed gueſt, as long as he is pleaſed to ſtay with him. And though two families ſhould occupy the hut at once, yet the fire-place, and certain portions of the place, ſuch as are next to the door, adapted for the keeping of wood, as well as thoſe oppoſite the fire-place, adapted for the purpoſe of keeping various domeſtic furniture are in common uſe with both.

This nation, which is accounted by many very ignorant of the world, as ſavage, and as brought under no cultivation of humanity, yet make uſe of the ſame hut and fire-ſide with ſo much friendſhip and harmony, that no conteſt, no brawl, except very rarely, is ever excited among them; when yet it is fully and abundantly proved, that numbers, who boaſt, I know not, a degree of refinement and elegance of manners, and from whom, on that account, you would reaſonably expect better manners, cannot inhabit one and the ſame city and neighbourhood without diſcord and conteſts.

The maritime Laplander ſtables his lambs and calves in the ſame hut with himſelf, but apart and in incloſures. How ſtrong the ſtench of ſuch a ſordid lodging muſt be to the gueſts, is eaſy to be conjectured. The hut of the maritime Laplander is built with a yard, on the one ſide of which is the hut itſelf inhabited by the family, on the other is the ſtall for cattle, hence men as well as beaſts muſt come by the ſame door into their habitation.

The hut inhabited by the family, the cow houſe, and in the middle between each, the yard, are under one roof, which is firſt covered with the bark of the birch tree, then with turf from the ground to the top; hence the appearance of the outſide is that of a lengthened and gently declining hill. At ſome paces from the hut is built a depoſitory called in Lapland *Loaave*. A building of this kind conſiſts of certain beams ſet upright, over which others are placed acroſs, with the branches of various trees in the ſhape of a houſe, without a roof. To this building the Laplanders bring hay and bind it together ſo cloſely, that each of the poles are covered, except the ends that jut out above the hay; ſo that you would ſay that the whole maſs was nothing elſe than three walls of hay. Hay piled and bound up in this manner is kept under the open air during the whole winter very ſound from the injury of rain which very rarely infeſts this quarter of the world in winter. The outſide of the hay rick can be injured indeed by ſnow, but the hay will nevertheleſs be unhurt within. Between the rafters where the arch is bent, the Laplanders hang their cloaths. The ſpace, above the arch, between the three walls of hay juſt mentioned, is called in Lapland *Aſke*, which word properly means the boſom. Here it is uſual to lay up the ſkins of the rein-deer, baſkets, and other veſſels of this ſort: here ſometimes the wearied Laplander takes up his reſt by night. The maritime Laplanders, as often as they are in want of food for their cattle, ſtrip the trees of their bark, and give it to them to eat: they carry home too the branches of trees as provender. When a tree is felled and its branches cut off the trunk is put aſide, and hence as it happened to myſelf, not ſeldom, when you come into thoſe parts, where the trunks of this kind lie along the hills and plains, they will appear to you, as ſo many putrified carcaſſes. The herds of the Laplanders feed beſides on certain roots, ſome of which have the figure of a bird, ſome another, &c., &c. Beſides hay, the uſual and ordinary fodder, there is another food, ſo to expreſs myſelf, prepared for cattle; it is extracted from the heads and bones of fiſh, from ſtraw, ſea-weed and from the ſediment under the oil, which is taken from the entrails of fiſh; which ingredients, when put together, are thrown into a kettle to be boiled, and when done, are given in a ſufficient quantity to cows, as a food they are very fond of. The

Norwegian

Norwegian peaſants, called alſo Normans, inhabiting the eaſtern Finmark, feed their cows, not only with hay, but ſea-graſs, on which the rein-deer uſually feed.

The winter cot of a mountain Laplander, with reſpect to the floor, dimenſions, and fire place, reſembles almoſt in every thing the hut of a maritime one, already deſcribed, except that the four beams or columns, which in the hut of a maritime Laplander, are erected near each end of the fire place, are not wanted in the cot of the mountaineer. Between the floor of the cot, which is covered with boughs of trees ſtrewed on the bare ground, and the cot itſelf, raiſed on ſlender poles, driven at their extremities into the ſnow, and covered with a woollen cloth, a wall of ſnow, called in Lapland *Seine*, is made; and ſince the ſnow muſt be removed from the place in which the cot is to be raiſed, in the form of a round circle, it follows, that the ſnow muſt on every ſide be gathered round the floor, as a ſolid wall. The cot itſelf conſiſts of four crooked beams, in Lapland, *Baeljck*, which make up its principal parts, and as it were its foundation and baſis. Two beams of this ſort are raiſed up on each ſide, but ſeparated by a ſmall diſtance, driven at their ends into the ſnow, the other extremity raiſed towards the gutter; and as it has been obſerved above, ſpeaking of the huts of the maritime Laplanders, they keep bending as the riſe, until joining at top, they are formed into the ſhape of a double arch. The arches themſelves, leſt they ſhould totter, are braced with a ſmall rafter. Between theſe often mentioned four beams are erected various poles, which are faſtened at their lower extremity, as well as the beams themſelves in the wall of ſnow juſt now mentioned, but by gradually riſing, effect that the cot on the inſide, ſhould not materially differ from the ſhape of a round arch, eſpecially, if the ſaid poles are drawn over with a woollen covering. Above, near the roof, another pole is placed acroſs, from which are hung bent iron hooks, by which their kettles and pots are ſuſpended over the fire.

The poles, as ſaid, placed in their ſituation and order, are covered with woollen blankets, which the Laplanders call *Loudagak*, not with thoſe which are new and ſound, but from ſuch as are the worſe for uſe. The blankets themſelves are divided into two greater parts covering the cot on each ſide. Each part of the blanket is faſtened to the poſt by the door, or in the inſide part of the cot; this forming in Lapland what is called *Skarro*. And ſince theſe blankets are not of ſufficient breadth as to cover the whole cot at once, they take care by a certain ſupplement, called in Lapland *Naaliſh*, and of the ſame ſtuff as the covering itſelf, which covers the gutter, ſhould be provided.

The door of the cot is made of woollen covering, cut in the ſhape of a pyramid, the inner part of which is ſtretched with tenter-hooks, with which they uſually lay out ſmoked ſalmon. Should a door covering want theſe tenter-hooks, which the Laplanders call *Zangak*, it could not ſupply the place of a door. At each ſide of the door is erected a thin pole, called in Lapland, *Biſhiamas*, to ſupply the defect of poſts. When the wind blows with violence, the door, which is hung only above, and indeed with a thong of leather alone, is faſtened to one of the poles, ſo that on that ſide, where the wind preſſes, it is entirely ſhut againſt it, which was it not ſo, under a ſtrong wind, the fire on the hearth would be toſſed about, and the ſmoke checked from going up, would fill the whole cot. When the wind does not blow the door is open, and a free entrance and exit is made for it.

The mountain Laplander uſually erects his cot in the middle of the wood, and goes out every day, with the exception of feſtivals alone, to provide wood. When a tree is felled he himſelf draws it through the ſnow to his cot, where he cuts off the top, and the leſſer branches, on a low block or machine, placed behind the door for this purpoſe. The trunk and thicker branches are cut into larger pieces. The wood moiſt and

ſtiff

ſtiff with the cold ſnow and ice, as brought from the foreſt, is laid on the fire, where taking flame, it oozes out a certain dampneſs, accompanied with a ſtrong vapor. The Laplanders call this vapor, *Shiudga*, from which, they ſay, they receive greater annoyance, than even from the ſmoke, of which the Lapland mountaineer ſo much complains. When preparing to light the fire, they catch the ſpark on the bark of the birch tree, and when caught, feed it from dried leaves and ſmall branches of trees: then as it lights, larger pieces of wood are put on; when the fire is lighted, the whole cot, from the top to the bottom is filled with ſmoke, to that degree, that all who are in it, are enveloped in a thick cloud, and are well nigh deprived of the uſe of ſight. As the fire gradually gets up and breaks out into flames, the ſmoke but by little and little decreaſes, and ſuch is the abundance and force in which it remains, that though ſitting in the cot on the ground, you may yet reach it with the crown of the head. When the winds blow more than common, the ſmoke is ſtruck back from the gutter, which is always open.

The Lapland mountaineer on going to bed, does not put out the fire, but lets it burn, until it is extinguiſhed of itſelf. He does not uſe a lamp with oil and link, contented with that light alone, which the fire on the hearth ſupplies him with on the mountains.

At the diſtance of ſome paces from the cot of the Lapland mountaineer ſtands a certain veſſel, called in Lapland *Loaavve*, raiſed on beams ſet an end, on which croſs ones are placed with the boughs of various trees. The whole of this building, where veſſels, rein-deer ſkins, &c. are put up, is not unlike a houſe built without a roof.

The ſummer cot of a Lapland mountaineer is almoſt the ſame as the winter cot, as I have ſhewn, with this difference, that this is covered with woollen; the ſummer one with thick linen cloth, nor is it defended by a wall of ſnow, the ſnow being at this time of the year, every where almoſt diſſolved.

The little tent, which the Lapland mountaineer, when he goes to hunt the rein-deer, or otherwiſe, intent for a longer journey, carries with him, is made of thick linen in the Lapland *Lavvo*. In the place where he intends to erect this tent, the ſnows are carefully cleared away, even to the bare ſoil, ſo that what are untouched, remain as walls drawn round in a circle. He then ſtrews the floor with branches cut from trees, laid over the bare earth; he makes a fire-place from ſtones laid along in two heaps; he erects beams, from trees which are at hand in the place, driven at one end into the edge of the wall of ſnow, but meeting above, and thus raiſed, ſurrounds it with a linen covering, of which there is mention above. The tent, built in this manner, the Laplander lights a fire on the hearth, in order to reſtore his limbs numbed with cold, or prepare his food, for which purpoſe he uſually takes with him a little kettle.

Should the Laplander, intent on a journey by ſea, be compelled to put in where, on account of the tempeſt ſuddenly coming on, or any other cauſe, there is no trace of civilization, and he has nothing at hand, of which he ſtands in daily uſe, he inſtantly builds himſelf a houſe: he takes the oars from his little bark, erects on the ſhore, and, when erected, covers them with a ſail, under which roof, as long as he can ſubſiſt there, remains.

Among the Laplanders who inhabit the mountains as well as the coaſt, are the cupboards, or little out-houſes, propped on rails, where it is cuſtomary to put up proviſions, and little utenſils; the cupboards of the maritime Laplander are at no great diſtance from his hut, the inhabitant of the mountain uſually builds them in the foreſt. See Chapter XI. on the journies of the Laplanders. The mountaineers uſually build vaults under ground called *Gedde-Borra*, cover the bottom with ſtone, and there put up the fleſh of the rein-deer.

Having now finiſhed the deſcription of the habitations of the Laplanders, I think I ſhould add ſomething of the little hovels of the Norwegian and Lapland peaſants. The hovel of a Lapland peaſant has wooden walls, and them low and without cieling. The beams on which the poles, ſuſtaining the turf or thatch, are lodged, are not laid acroſs, but lengthways and within. There is no gutter, as there is in other huts; nor have they light from windows, but through chinks, which when the occaſion requires they ſhut up with a little ſhutter. Within is an oven, not very unlike thoſe of bakers, over which is piled a large heap of ſtones. In this oven a great heap of wood every day is lighted, and keeps burning until the oven and the ſtones laid on it glow with a very intenſe degree of heat.

Whilſt the oven is heating, the outlets and chinks, as many as are, are thrown open, that the ſmoke may have a free egreſs, to be cloſed again when the fire is out; by which means the heat, which is the greateſt poſſible, is within, and kept up by the heat of the glowing oven and ſtones, it continues until freſh fuel is brought and lighted up in the oven. When the chinks and outlets are all cloſed up it is dark within, and for this reaſon they light unctuous pieces of the fir-tree in the place of a candle, and diſpel the darkneſs ſo far as to need no other light to complete their uſual work. The floor of the hovel of a Norwegian peaſant, an inhabitant of Finmark, is paved with hewn ſtone.

The inner ſides of the walls are made of timber ſet upright, not unlike a piece of floor-work; but without are covered firſt with the bark of the birch-tree, then with turf, one lodged upon another, ſo that the bark of the beech-tree ſhould be between the turf and flooring. There is no diſtinction of floors throughout the houſe. The roof riſes in a point outſide, as with the other peaſants, covered with the bark of the birch-tree, and with turf.

Olaus Magnus, a celebrated writer, is of opinion, that the boiſterous winds and deep ſnows, which are condenſed in Finmark, are the reaſon that the inhabitants of this tract build for themſelves ſubterraneous habitations; but in my opinion, the conſtruction and uſe of theſe dwellings is to be aſcribed to the ſcarcity of wood, eſpecially in inſular ſituations, where the ſoil is bare and barren. But as to theſe habitations of wood tumbling down by the attack of winds, provided they are raiſed on a firm and ſolid foundation, is an idle fear. For almoſt all perſons in official ſituations, appointed by the King for adminiſtering the public affairs in this country, as alſo merchants reſident here for purpoſes of buſineſs, it is certain live in wooden houſes, and them ſeldom conſiſting of two ſtories; to ſay nothing that theſe ſubterraneous caves are the beſt adapted for preſerving heat.

CHAP. VI.—*Of the Beds and Bed-chambers of the Laplanders.*

THE bed on which the maritime Laplander repoſes in his hut, as the mountaineer when he goes to reſt in his cot, is covered and furniſhed with the ſkin of the rein-deer laid on the bare branches of trees, which is the flooring equally of the hut and cot. The cloaths which they wear by day ſerve for a bolſter; a coverlet, made of the unſhorn yet dreſſed ſkin of a ſheep, with the hairy part inſide, is their blanket. On this blanket is afterwards laid a rough woollen cover. The woollen blanket under which the mountaineer lies in winter is in the ſhape of a ſack, into which he thruſts his feet. The huſband, wife, children, and ſervants, every one, even if the cold is extreme, go naked to bed. The beds have no other ſeparation than a ſmall pole negligently placed from each other. In the inſide of the hut (ſee what is ſaid on the various dimenſions of the floor

of a maritime Laplander's hut in the preceding Chapter, for in the cot of a mountaineer the ſame obtains) is a ſmall piece of wood, the inſide of which the huſband with his wife, on the outſide towards the door the children ſleep. A little below, not far from the door, is alſo another ſmall piece, within which, next to the door, is the ſervants bed. And though all the beds are ſeparated by this partition piece of wood from each other, yet ſo near is one to the other, that the parents can touch and handle the children when in bed, as theſe can their ſervants.

The mountain Laplander ſleeping in his ſummer cot, under a linen covering, equalling in length and breadth the bed itſelf, and coming over his body neither tight nor cloſe, but leaving a due ſpace between, goes to reſt: for the covering raiſes itſelf in the middle like a ſmall oven, touching the earth at the end and on each ſide. But this covering is bound with thongs to thoſe bent beams which, as was ſhewn in Chapter V., ſpeaking at length of the habitations of the Laplanders, form within the cot of the mountaineer, to the intent leſt when they repoſe they ſhould be unceaſingly annoyed by gnats, with which this country in ſummer-time abounds.

For the long gnat flies about Finmark every where, and in ſuch ſwarms, that thoſe who walk between the trees, from the multitude of theſe inſects that get about the face, ſeem as enveloped in a cloud: they are equally troubleſome to man and beaſt. Thoſe who are ſtung by them in the face or hands begin ſoon after to itch and to ſwell, with certain white ulcers; ſo that you would believe that perſons coming in ſummer out of the country, with commonly a ſwoln and deformed face, were infected with the leproſy. The Laplanders, buſied in the foreſts in ſummer, either in getting in wood, or bark from trees, with difficulty can eat on account of theſe gnats, who no ſooner is the mouth opened than in a ſwarm they fly in. When the winds ſet in ſtrong they inſtantly depart; but when they ſubſide, return again and fill all places, with their accuſtomed humming.

The recreation which the mind might be diſpoſed to take from the agreeable return of ſummer, after the long weariſome time from the feſtival of Michael the Archangel to the month of July of the year following, is diſappointed indeed, in a great degree, by theſe annoying inſects. But how rude and immitigable the temperature of heaven is in this quarter of the world, may be learned from this, that when on the feſtival of St. John, and of courſe in the middle of ſummer, I had been on a viſit with Peter Andius, a provincial judge, who lived in Talvigia, near the ſhore, I found a great heap of ſnow lying near the windows of the room I ſlept in, as yet unthawed.

And as the ſaid inſects are ſo troubleſome to men, ſo do they create no leſs trouble to the rein-deer and the reſt of the cattle; for whenever the hordes are returning from paſture, theſe annoying gnats in a ſwarm fix themſelves on the back of each beaſt, not to quit him until they have taken their full of blood; for when they are driven off by the hand, drops of blood begin ſoon after to flow from the back of the animal. It is with difficulty that they endure ſmoke; and for this reaſon, when the cattle is brought to the milk-pail, the Laplanders burn turf, or ſome other moiſtened materials, that will furniſh plenty of ſmoke, to the intent that, the gnats driven off by theſe means, they may milk the cattle quietly and without diſturbance. And though this kind of inſect is ſo feeble and infirm as to periſh with the ſlighteſt touch of the finger, yet is it able to penetrate with its ſting the very hard hide of a horſe, thick woollen ſtockings, and other things of equal hardneſs.

CHAP. VII.—*Of the Meat and Drink of the Laplanders.*

THERE are certain things on which the Laplanders live, whether you look to the materials, or to the manufacture and manner of preparing them, are common with thoſe of the reſt of the Norwegian peaſants. Concerning theſe it is not my intention to ſpeak, as I have propoſed only to mention ſomething of that kind of food which is peculiar to the Laplanders, from the nature of the materials and manufacture.

They boil the milk of the rein-deer in ſummer, infuſing their liquor, called *Syre*, until tinctured with the colour of that liquor, it comes to a conſiſtency. The milk which in autumn, eſpecially about the feſtival of All Saints, is taken from the rein-deer, is poured into caſks or other veſſels deſtined for this purpoſe, where, from the heat ſtill remaining in the air, it grows ſour, and ſoon after, the cold gradually increaſing, it is condenſed into ice, by which means it can be preſerved, and is, the whole winter. The milk which after the feſtival of All Saints comes from the rein-deer, mixed with berries of a black colour, which the Norwegians call *Kraefebaer*, is poured, purged, and clear from filth, into a rein-deer's bladder, where, by the force of the cold, it thickens in a ſhort time. This is their winter nouriſhment, which, when the Laplanders are going to eat (they eat it during winter once a day, about noon), they cut with an axe a piece from the bladder, to which the milk, mingled with berries, ſtick, ſo that the ſkin of the bladder, milk and berries, thickened with the cold into one conſiſtency, are cut together at once. This maſs of milk, mingled with berries, and part of the bladder of the rein-deer, condenſed with cold, is afterwards cut into a variety of parts, which as they were cut, ſtiff and unthawed by the application of heat, are put on plates to be eaten. Whilſt they are eating their teeth gnaſh with the cold, notwithſtanding there cannot be in the milk of the rein-deer, from its natural fatneſs, ſo much cold as is in the milk of other animals.

The milk which later, and when the winter is farther advanced, is got from the rein-deer, is laid up in bowls, made from ſtocks of the birch-tree, where, from the extremity of the cold, it is ſoon changed into ice. The Laplander does not uſe this congealed milk himſelf, but keeps it for his miſſionary and others, whom he is pleaſed to receive with magnificence and honour. When this milk is ever to be eaten, the bowl, in which it has congealed, inclined a little, is placed near the fire-ſide, whilſt the ſurface of the congealed milk, turned to the fire, gradually liquifies; which when done, the bowl is taken up, and whatever milk is thawed by the heat of the fire is eaten with a ſpoon: this is repeated until they are ſatisfied. Congealed milk of this ſort is protected againſt the wind by a cover, which if neglected, would loſe in a ſhort time its ſweetneſs and whiteneſs, and, tinged with yellow, would ſoon become rancid.

The Laplanders make cheeſe from the rein-deer's milk, and in the making of it obſerve this form: firſt, they mingle water with the milk, which otherwiſe, by reaſon of its thickneſs, when the rennet was put in, could not be diſſolved nor ſeparated: then they heat it over the fire in a kettle; when heated, the rennet is poured in, by which the milk is inſtantly diſſolved, and the whey being ſeparated, is formed into cheeſe. Laſtly, they take the cheeſe out of the kettle, in any ſhape it takes, or to be preſſed and formed in a linen cloth. The cheeſe itſelf is faſhioned into a circular form, of a moderate thickneſs. It is eaten at will, either as it is, or boiled in water; ſometimes it is roaſted, which is done in this manner: the cheeſe is cut into ſmall parts, which, when pared, are put near the fire to roaſt; which is repeated at the will of the feeder. So much does this cheeſe abound with fat, that on being put to the fire it burns as a candle. It is thought alſo a cure for a kibe on the heel. That rennet by which rein-deer milk

is turned and made into cheeſe, conſiſts of a whey in which the paunch of an aſs, or the entrails of a rein-deer, have for ſome time lain.

Butter is alſo made from the milk of the rein-deer, of a white colour, but not ſo rich and well taſted as what is made of cow's; the reaſon is obvious, that this is made from cream, but that from mere freſh milk.

The maritime Laplanders whoſe herds conſiſt of oxen, ſheep, and goats, make butter from cream alone. The Lapland woman, occupied in the making of butter, ſits on the ground, holding a bowl in her lap filled with cream, which ſhe ſtirs and works with her finger till it thickens into butter.

The mountain Laplander ſubſiſts on the fleſh of the rein-deer freſh killed through the whole winter; hence not a week paſſes during the ſeaſon in which he does not kill one or two, if the family is numerous. The fleſh is cut up into pieces, which, unwaſhed and covered with dirt, is put into a kettle. It is dreſſed at a ſlow fire, put to the one ſide of the kettle that the fat which ſticks into the fleſh ſhould be the better extracted. From the meat, when ſufficiently boiled, the oil, which lies above is ſkimmed off with a ladle, put into a veſſel ſprinkled with ſalt is put aſide. Then each piece taken rough from the kettle, is put on a diſh, while the broth is left to ſtand. When put on the table, the father of the family, with his whole houſehold, ſits down round the diſh, which is of a circular ſhape. Whilſt eating, they dip the bits in the oil ſqueezed from the fat of the fleſh, which is put in a veſſel; theſe they take not with a fork, but with the point of a knife. In the kettle, where the broth remains, when the meat is taken out, is a little ladle, with which they ſup a little of the broth while they are eating. This broth conſiſts of mere water, without any mixture of flour, or ſuch like, and is well taſted from the meat boiled in it alone. It is ſaid by ſome, that the Laplanders feed on raw fleſh, but in all contradiction of truth. The mountain Laplander, beſides the fleſh, boils the legs of the rein-deer, freſh killed, and, when ſufficiently boiled, takes them out for the marrow. A diſh of this kind is among this people of any price; certain it is, it is uſually ſet before a miſſionary as ſomething peculiar and delicate. The entrails of the rein-deer, which are not boiled in the ſame kettle with the meat, are food yet for the Laplanders. So economically does he convert every part of the animal he has killed, to his uſe, that not even the bones, in which any fat or marrow may be left, are given to the dogs, but, after he has picked them, he breaks them, and takes care to extract whatever fat may remain, by boiling. While he is engaged in this, he is ſeated on the ground, and on the rein-deer's hide, which is ſpread out on his lap, he breaks the bones with a mallet; when brokem, boils them, until whatever fat be in them is extracted. The lungs are given to the dogs; for the mountain Laplander, when a rein-deer is killed, uſually diſtributes among the dogs, which he muſt have to guard and protect the rein-deer. I knew a Laplander who lived on the mountains, named Oluf Nielſen, (that is, ſon of Nicolas) Aujevare, who kept eight of theſe watch dogs. But they can bear hunger to an incredible degree; for, with the exception of theſe lungs juſt mentioned, the miſerable famiſhed animals get nothing beſides a little broth made from the blood of the animal, called in Lapland *Vuorramaelle*, which is given to them in the morning, and of the meat in the evening, to be conſumed.

The Laplanders, as was ſaid, not only boil the meat but roaſt it on a ſpike, the end of which is faſtened in the ground. It is to be obſerved, that the Laplanders are very fond of every thing roaſted, eſpecially of meats. The roaſted, of which they are ſo fond, is not put on ſpits, but ſpikes, nor baſted with butter. From what is ſaid on this ſubject, it is plain, that the fleſh of the rein-deer, freſh, is the ordinary food of the Laplander,

lander, and that he makes little or no uſe of it ſalted. For it would be unneceſſary to ſprinkle with ſalt the fleſh of animals which are killed in autumn and winter, (for in the ſummer ſeaſon the Laplanders rarely kill, as they are beſt preſerved by that very extreme of cold itſelf.

Yet it ſometimes happens, that the mountain Laplander through repetition and languor of the conſtant uſe of freſh meat, takes care to ſmoke, for the ſake of variety, ſome ribs of the rein-deer, and thoſe when raw, which he firſt ſtabs with the point of a knife, that the ſmoke may more eaſily find entrance. And, when this is done, he puts them up between the poles and rafters, of which, in Chapter V., ſpeaking of the habitations of Laplanders, we treated. Beſides the meat of the rein-deer, which the mountain Lapſanders, and the beef and mutton, which the maritime ones uſe, the fleſh of bears, foxes, otters, ſeals, and ſuch animals are eatable among them, with the exception of the ſwine, which is interdicted to the Laplander.

The Laplanders engaged in fiſhing for ſalmon, cut from this fiſh, as the Norwegians do from the larger flounder, long ſlices, called in Norwegian *Ravreffling*; but, though the ſalmon is a nobler fiſh than the greater flounder, yet the pieces of this are better taſted. The ſalmon is cut from head to tail into two equal parts, a variety of cuts being indented in its fleſh, and then hung up to dry in the ſun.

The Laplanders live on fiſh that is dried and pounded without any preparatory dreſſing, dipping each bit into oil ſqueezed from the entrails of the fiſh, (oil of this kind is called in Norwegian, *Tran*,) and what you may be more ſurprized at, the mother gives this food to the infant at her breaſt. She chews a bit before dipped in oil, and, when chewed, puts it in the mouth of the infant, who is thus accuſtomed to this oil from his cradle. And hence it is, that oil of this kind, to the Laplander, whoſe natural appetite is changed, is more agreeable and pleaſing than butter. But though it is true, that the Laplanders are much delighted with this oil, yet it is by no means true, which ſome author aſſerts with ſufficient confidence, that every Laplander conſumes a pint and a half of this very unctuous and rancid liquor at each meal. Nor have I ever obſerved, what yet the ſame author ſeriouſly contends, that every woman, when brought to bed, drinks in like manner a pint and a half of this ſaid oil, for increaſing her ſtrength. I do not yet doubt, that a ſmall portion is given to a woman when near her time, which is thought to aſſiſt and ſtrengthen her when in labour.

Thoſe who are in diſtreſs, through want of dried fiſh, put on the embers the dried heads and backs of fiſh, in which there is any meat left, and when done, eat it.

Dried fiſh, the broiled heads and back-bones of them, the marrow of ſeals, cut into long pieces, which, together with the fiſh, before put into the pot to be boiled, were ſome little time put up in the bladder of a ſeal, that the fat might be the eaſier extracted; all theſe collected and mixed, they uſually boil together. A half hour at leaſt is conſumed in the boiling a fiſh, which, when boiled ſufficiently with the other ingredients juſt mentioned, are eaten together. They dip the fiſh in a certain liquor, not unlike common oil, which exſudates from the marrow in the bladder of the ſeal.

And as it is cuſtomary with the Laplanders to roaſt their fleſh by a fire, on ſpikes, ſo do they dreſs fiſh in the ſame manner; for inſtance, in the dreſſing of the greater codfiſh they uſe this method: from this fiſh, when freſh taken, they firſt take out the entrails, then the liver, and ſtuff it, and then put it on the ſpit to roaſt by the fire, and, ſeated on the ground, they place a diſh in their lap, and cut out the belly; and, ſince more time is taken up in dreſſing the liver than in roaſting the fiſh, they put it pounded and not yet fully roaſted, on a heated ſtone, that all rawneſs being removed by theſe means from it, they may eat it with the reſt of the fiſh without any illneſs.

The liver of fiſh is boiled, and while boiling, is ſtirred with a ladle, until it changes into a ſort of a pulſe, which is mingled with black berries, called in the Norwegian *Kraef-Baer*. Food of this ſort is taken with ſpoons, without bread, which they never, even with the fatteſt foods make uſe of. That the Laplanders ſhould draw on themſelves a variety of diſeaſes, from the frequent uſe of ſuch unwholeſome meats, you would eaſily believe; but that it is otherwiſe, the experience of many years, has enough and more than enough confirmed; that not only the Laplanders, who inhabit this tract of country, but almoſt all, are men of very great ſtrength and very healthy. The various kinds of diſorders, and whole battalions of fevers that range the world, are baniſhed from this place; for during the ſpace of ten years, I have been in Finmark, I could not find any trace of dyſentery, of leproſy, of malignant fever, and ſuch contagious, maladies. The ſaid foods, ſuch as dried, pounded fiſh, dipped in oil preſſed from the liver of the fiſh; dried heads and back bones done on heated ſtones, freſh fiſh, boiled with the marrow of ſeals, and dipped in oil preſſed from the entrails of fiſh; the greater codfiſh (this the Norwegians call *Hyſe* or *Kolje*) ſtuffed with its liver and roaſted, as alſo the liver beat up with a ſpattle and mingled with a kind of black berry, much in uſe among the maritime Laplanders. The mountain Laplanders contrive to get now and then for themſelves a few ſea-fiſh frozen with the ice, which, by reaſon of the extreme cold, raging on the mountain tops for a very long time, can eaſily preſerve them ſafe through the whole winter. From fiſh of this kind, they acquire a food, which cannot but be to them, ſo much accuſtomed to live on rein-deer, as delicious, as it is rare. The maritime Laplander frequently, the mountaineer more rarely, make themſelves a broth, from water and meal, with which they mingle tallow, to make it more ſavory. They uſually put the tallow into a certain entrail called in Lapland *Doggie*, which when ſtuffed, reſembles a long pudding. The tallow itſelf, before it is mingled with the broth, is beat with the inteſtine, with which it is ſo bound up. Beſides pieces of freſh meat and cheeſe of the rein-deer, cut ſmall, are put into this broth, to render the reliſh more ſavoury.

Another broth (*Vuorra-maelle*), is in uſe among the mountaineers made from water, blood, pounded tallow, and meal, if in plenty. The blood, which makes up part of this broth, is poured from the bladder of the rein-deer, where it is kept frozen by the cold the whole of the winter. When the broth is ready, a piece of the frozen blood, with part of the ſkin, is cut from the bladder, and then put into a kettle to be boiled; they uſually dine the whole of the winter on broth of this kind. They ſometimes make cakes, from a mixture of water and fine flour, which they bake on burning coals.

There are certain foods prepared by the Laplanders, not ſo much for the ſake of ſatisfying the natural wants, as for the delight and gratification of the palate; for inſtance, they ſcrape or pare off, the white covering or bark, with which firs or birch-trees are ſurrounded, with a knife, which ſome, in its freſh ſtate, others when dried in ſmoke, and dipped in oil preſſed from the fat of the fiſh, eat. In the place of apples, nuts, and other productions of this kind, they eat, for their amuſement, Angelica, not the root itſelf, but the herb, and that very frequently in its raw ſtate, and ſometimes baked on coals, or boiled in milk. In the early ſpring, when the ſnow is giving way, they uſually gather berries, which, during the winter, were covered with ſnow, for uſe.

I myſelf have ſeen boys chewing the thick weed, which the ſea throws upon the ſhore, which is not unlike a thong of leather or a whip. The Laplanders are very eager after tobacco, which they one time chew, at another lighted, they draw in ſmoke, through a pipe of clay. While chewing, they ſpit out alſo into the hollow of the hand, and the

ſpittle, tinged with the colour and taſte of tobacco, they eagerly ſnuff, regaling two ſenſes at once, the ſmell and taſte with one piece of tobacco. They make alſo a ſnuff of the ſame tobacco, with which, if any thing is mingled, it is Caſtor. And indeed, that they ſhould give the ſtronger proof of their mad fondneſs, or rather mad deſire for tobacco; when in want of it, they do not ſcruple to chew the rollers packed up in the tobacco, and what you will expreſs greater ſurpriſe at, the little dirty leather bags, in which they keep their tobacco, when cut into ſmall bits.

Among the Laplanders, eſpecially the ruſtics, inhabiting Finmrak, there is a cuſtom, that when in a ſcarcity of tobacco, ten or even more ſmoke by turns from the ſame pipe. They ſo order it; they ſet down in a circle, then he who is fond of a pipe and tobacco, after a few whiffs, from his ſeat, offers the pipe to him who ſets next to him, who, taking alſo two or three whiffs, paſſes the pipe to his next man, and thus on, until the owner, ſhall have equally ſhared it among all his companions; a courtſey of this kind is eſteemed very liberal and honourable in that nation, and he, who performs it, obtains conſiderable favor among them.

The daily and ordinary drink of the maritime Laplander, as well as mountaineer, is cold water, mingled with ſnow; for ſnow when at hand, is always mingled with their drink; and hence it follows, that the veracity of this author is queſtionable, who aſſerts, that the Laplanders firſt heat in a brazen kettle over the fire, the water they intend to drink. In the inſide of the cot, as well as hut, is a brazen kettle or tub, filled with water. See Chapter V., on the houſes of the Laplanders, and tub which filled with water, when they chooſe, they drink of.

The Mountaineer, fearing the want of water, generally builds his cot on marſhy grounds; yet ſometimes it happens, and that not ſeldom, that he is obliged to build in dry, where through want of a ſpring, he is compelled to drink ſnow melted over the fire; a bitter, and very unpleaſant drink, on account of the very bad taſte, which ſnow melted in an open kettle, contracts, as well from the kettle, as the ſmoke. Coming into places, where the water by reaſon of the ice that covers it, or any other cauſe, cannot be eaſily got, the Laplanders procure drink for themſelves in this manner: they put down at the one end, a hollow bone, or an earthen tube into the water, holding the upper in their mouth, and thus, as by a pump, drink.

The Lapland Mountaineer, riding in winter through the mountains, uſually takes his axe in his ſledge with him, by which on his journey, over lakes and rivers frozen with cold, he cuts the ice, and inclining a little with his body ſitting in his ſledge, he drinks.

And this is ſufficient on the meat and drink of the Lapland people. But it deſerves to be noticed, that the offices of cook are performed by males, not by females among them; for it is the father of the family himſelf that puts the meat and things into the pot to be got ready, while dreſſing he ſits by them, and takes care that when boiled and got ready they are laid on the table. The Laplanders, rarely, waſh and clean their pots and kettles. The plates, out of which they eat their pottage, they clean, by licking with their tongue.

CHAP. VIII.—*Of the various Furniture and Utenſils of the Laplanders.*

THE whole economy of the Laplanders is ſimple and ſhort, ſo as not to ſtand in need of much furniture, nor if filled up with it, could they commodiouſly make uſe of it. The Laplanders of the mountain inhabit a ſmall cot, which here to-day, to-morrow is

is fixed elſewhere, and taken down. Nor do the maritime Laplanders fix their abode leſs compactly, ſo that an abundance of furniture would be rather an impediment, than uſe to him. There are no ſeats, no tables to be met with, in their habitations. A few pans, kettles, bowls, and wooden diſhes, which are made of birch; ſtocks, flaggons of tin, horn ſpoons, and other vaſes of this ſort, of little value and account, make up the whole of their houſehold furniture. Some have diſhes of tin, and ſome who are more opulent ſometimes poſſeſs a few ſilver ſpoons. The pots in uſe among the Laplanders are without feet, and can conveniently be ſo; for as in their habitations, when the flooring conſiſts of mere branches of trees, ſtrewed over the baſe ground, it could eaſily happen, that if theſe pot had feet, when placed on them, they could not ſtand firm. The hooks, by which theſe kettles and pots are held over the fire, among the mountaineers are iron, but among the inhabitants of the coaſt, are made of wood. It is a cuſtom among them to keep ſalt in the ſkin of a pigeon. The lamps, which ſupply the place of candles, in the huts of the maritime Laplanders, the mountaineers uſe none, contented with the light which the glowing fire furniſhes,) are fabricated from wood, ſurrounded with a wooden circle. In the lamp itſelf is put a ſhell, which in Norwegian is called *Harpe-Skioel*, that is the Harp-Shell filled with oil, preſſed from the liver of fiſh, a certain marſhy weed, called in Lapland, Sinok, being uſed in the place of a link. For cradles they make uſe of a hollow trunk, (they call it themſelves *Gieedk.*) In this the infant, wrapped in woollen cloaths and ſkins, and faſtened with a twiſted rope, going often round the cradle, lies. In that part of the trunk, which the head of the infant occupies, is a certain bending, repreſenting a ſmall arch, formed by a ſkin, expanded over pieces of wood, to cover the head of the child in it. From this arch or bend, is a cord drawn along the cradle lengthwiſe, to which is annexed a thread with beads, and with this the infant when looſened delights to play. This cradle with the infant in it, the mother when wiſhing to huſh it, uſually puts in her lap, when going to walk, on her back, and to ride in the vehicle or ſledge.

CHAP. IX.—*Of the Rein-Deer, and their Management by the Laplanders.*

THE rein-deer, couple about the end of autumn, but bring forth in ſpring. The elder among the male, and ſuperior in powers among the herd, called in the Lapland, *Aino-valdo*, drives off competitors, unequal to him either in years or ſtrength from the view and contact of the females. It is an opinion with many, that the females of this animal do not produce their young, but in the moſt tempeſtuous ſeaſon, clouded with miſts of ſnow and hail, whence the ſtorm which in ſpring after feed-time ariſes is commonly called *Rein-Kalve-Rein*, the time of bringing forth the young, in the Norwegian language. But this opinion is erroneous and juſtly exploded; for it follows of courſe, and the order of nature requires, that the rein-deer, like other dams, ſhould neceſſarily, when the time comes, bring forth, nor can they bear the young beyond the appointed time, whatever ſtate of temperature the air may be in. Some bear yearly, called *Aldo*, others every other year, called *Rodno*, and ſome are conſtantly barren, which they call *Stainak*. The young ſoon drop their horns when born, and inſtantly from their birth, take delight in the wonderful ſwiftneſs of their legs, in which they are found in a ſhort time to equal their dams. Every dam diſtinguiſhes her own from the reſt of the herd, by the ſcent alone.

The young rein-deer (I mean thoſe, whoſe dams are of an aſh-colour, for the white generate white,) when firſt born are red, with a black line running along the back directly

directly, and are then called *Mieſſe*. This colour endures till autumn, when it changes into a browniſh and well nigh dark colour, red hairs diſtinguiſhing the greateſt part, when they are called *Zhiermak*. The young are generally aſh colour, ſome white with aſh-ſpots between, and ſome altogether white. Thoſe of an aſh-colour, when the winter gets advanced, and is drawing to a cloſe, and they are changing their furs, change then their aſh-colour for a dark grey, but theſe freſh hairs increaſing more and more, become inſenſibly dark and ſleek in the end.

The male by far ſurpaſſes the female called by the Norwegians *Simpler*, in the ſize of the body. A great many of theſe, even ſome from the females, are diſtinguiſhed by their high and branching horns; ſome, but few, are altogether deſtitute of them. In ſome a ſingle horn only comes out; theſe the Laplanders call *Abmel*. Thoſe who bear horns, loſe them once a year, in the ſpring time. When the old are fallen off, new ones in a ſhort time grow up, which at firſt come out from the forehead, like two dark downy apples; when they have gradually increaſed, the ſkin, with which they are covered, puts on an aſh-colour, but at the approach of autumn, when they have obtained their full growth, ſhedding their coverings, they come out ſmooth. Each animal ſuſtains two very large horns, which at the bottom are thicker, but a little above, ſuppoſe in each horn, a leſſer branch grows out reſembling a pointed plate, not unlike the palm of the hand, with its fingers extended. This branch is called in Lapland *Aude-Giet*. Above the ſaid branches, eſpecially in the males, other ſmall points, or little branches project, and near to the higheſt point of each horn, is another pointed plate, called in Lapland *Liedme* or *Zhioaarve-Sleddo*. At the root of the other horn is extended another pointed plate, called *Galb*, a little larger, which is ſometimes turned downwards to the noſe of the animal, and which is uſually cut off leſt it ſhould hinder it, whilſt feeding. The horns of ſome wild rein-deer are of ſuch magnitude and ſize as to weigh eighteen pounds. And as juſt ſaid, rein-deer carry branching horns, ſo does it happen, and not rarely, that ſtruggling with each other, they get ſo entangled, that without the help of man, they can not be ſundered and diſengaged from each other. The greateſt fat of this animal is on his loins, and among the rein-deer are found ſome, who are ſo fat in theſe parts, that in the autumn, before they go to the females, they are found to be more than a full ſpan in thickneſs.

The rein-deer are annoyed the whole ſummer by certain flies, or inſects, which getting into the noſtrils, miſerably worry them. This animal is ſubject to a variety of ills. A certain malady reſembling the pox, rages among them, by which ſo great is the havock that a Laplander, who had a large range of rein-deer, could perceive that he would be ſtripped of a very great number, if not all of them, in a ſhort time.

Certain worms that get into the fleſh, ſhort and thick, called in Lapland *Gurma*, near the back of the rein-deer, eſpecially when in their firſt year, are alſo generated in the ſpring time. The Laplanders ſometimes dig out worms of this ſort, and the rein-deer itſelf ejects them through the noſtrils, with a ſnorting and neighing. They eat through the ſkin of the animal, and occaſion that the ſkins which are ſtripped from the rein-deer in ſpring-time, are eſteemed far inferior to others. There is a certain worm, which is called in Lapland *Saul*, not rarely found under the tongue of the rein-deer. In ſome the neck is ſubject to ſwellings, in others the ears, ſmelling very ſtrong; ſometimes it happens that the joint next the hoof is diſeaſed. The animal when walking is agitated and brings out a very loud noiſe.

But the rein-deer is an animal of the greateſt ſpeed, becauſe within the ſhorteſt ſpace of time an immenſe journey can be performed, though he is not governed as a horſe, with reins, but inclining now on this ſide, now on that, in his courſe he makes a

winding and longer track, which is eaſily collected from the tracks he has left in the ſnow. Within the ſpace of ſix hours, and perhaps a ſhorter time, from the riſing to the ſetting ſun, I completed with a ſingle rein-deer, in the month of February, when the ſun was ſcarce three weeks apparent in the horizon, a journey of eight entire Norwegian miles, from the Norwegian chapel of Mazi, which at the time of the royal miſſion for the benefit of the Laplanders of the mountains, belonging formerly to the congregation of Alten, was built upon a riſing ground, to Koudekeino.

As the rein-deer is fleet in running, ſo is he not inexpert in ſwimming; they uſually run full of playfulneſs up and down, for their own pleaſure, without any one driving them, and exult as if through joy, as I myſelf have frequently ſeen. The Laplanders affirm that the rein-deer, by ſporting in playful rounds and gambols, predict a ſtorm at hand. When annoyed by heat in ſummer, they uſually get upon the higher grounds, catching at the cold for refreſhment, by ſtriking the ground with their feet.

The principal and moſt uſual food of this animal is the white lichen, which in winter the rein-deer traces out under the ſnow; and for the getting at it, he removes the ſnow with his feet till the ground is clear; and hence along thoſe places the herds range in for paſture, frequently gaps and holes are ſeen in the ſnow. Sometimes too it happens that the fields are ſo hard with ice, or ſo covered with ſnow, that it is not in the power of the rein-deer to get with his hoofs at the lichen that lies under. There is no calamity the Laplanders dread more than this; for under this attack there is great riſk leſt the whole race of rein-deer, the chief ſtrength and greateſt care of this nation, ſhould all fail, and doubtleſsly would, were not the impending evil averted by Divine Providence. While the rein-deer are ſtraying in the plains and mountains in ſearch of food, it now and then happens that an error carries away ſome from the reſt of the flock, now fed and at reſt, into the dreary and uninhabited parts of the country, where they fall inſtantly a prey and food for the ravenous wolf.

The domeſtic rein-deer that the Laplanders have live conſtantly in the open air, never coming under roof, and feed in the ſummer on graſs, and on lichen in winter. But the Norwegian peaſants, ſome of whom dwell near the river of Alten, famous for ſalmon, uſe the rein-deer as draft cattle, in the place of horſes, keep them the whole of winter under ſhelter, and feed them with white muſc, which they gather, not as hay, with a ſcythe, but with a kind of ſpade, adapted for the purpoſe. The rein-deer are very fond of human urine, from the quantity of ſalt in it; hence no ſooner do they ſee it than they haſten up in order to drink, and if on the ſnow, they dig it up to get at it. They range at large about the plains, ſearching for muſhrooms and mice, in Norwegian called *Lemaenner*, in Lapland language *Godde-Saeppan*, a deſcription of which I have given in Chapter XII. on the wild beaſts of Finmark. They eat off the heads of the mice and greedily devour them, throwing away the reſt of them. As the ground is covered with ſnow they very ſeldom drink water, ſatisfied with the ſnow alone to quench their thirſt. The rein-deer in the ſledge inclines his head to the ground to take up a little ſnow for allaying thirſt, which the Laplanders expreſs in their language, *Muottagiit Gadzat*, that is, to drink ſnow.

That ſnares are ever laid for the rein-deer by wolves is evident enough: to keep theſe off, the Laplanders expoſe old rags, and beams covered with rags, and other terrors of this kind. But never is the danger greater to the herd than when the tempeſt is ſetting in, for then this moſt ſavage animal furiouſly attacks them; ſo that the Laplander, if he has fixed his habitation in a place infeſted by wolves, is compelled, together with his whole family, to be continually on the watch, if he wiſhes to preſerve his herds. The domeſtics come out by turns to ſtrike againſt the ſledge with a ſtick, that the enemy,

terrified

terrified by the ſound, may be driven from the cattle. And indeed ſo much conſtant and ſuperintending care do the miſerable rein-deer really ſtand in need of, who are not only weak, but even ſtupid to their own ruin, againſt their crafty invader, that they preſent themſelves to him as the enemy; for no ſooner do they ſmell the wolf than all, as many as are, riſe up, taking flight, not where the wolf is, but to another quarter, when they would beſt conſult for their ſafety, did they remain in quiet round the cot; the treacherous invader, as he well remarks it, purſues themas they fly, and miſerably kills them. The domeſtics hearing of the ſudden flight of the rein-deer which lie about the cot, and of their being ſcattered through the plains, eaſily infer that the wolf is not at a great diſtance, and readily bring aſſiſtance, yet uſually too late for the herd, who has already ſuffered. Should a wolf meet a rein-deer in the meadows, not far from his dwelling, and ſhould perceive that he is making for the hut, he cunningly ſtrives to prevent his reaching it, and forces him to make for the foreſt, where at his will, and without the fear of any aſſiſtance being brought to him, he invades his prey. The wolf very rarely comes up with the rein-deer flying up the hills; it is when running down the declivities he overtakes him moſt eaſily. Should he only lay hold of him by the loins with his gripe, but loſe him when wounded, he ſeldom, and with difficulty, lays hold of him again, eſcaped from his claws, uſually evaded by the ſwiftneſs of the wounded rein-deer; but if he does, he choaks him by laying hold of him by the throat. I myſelf have ſeen ſix rein-deer together, whom, near the cot, the wolf has ſtrangled, but alarmed by the ſudden coming up of the men, had not torn; ſo that when their carcaſes lay ſtretched upon the ſnow without ſign of life, but ſound and unhurt in appearance, for the wolf had ſo artificially killed them, that by intercepting their breath he did not leave the leaſt mark of a mortal wound. The wolves do not devour the carcaſe in the place it is killed in, but dragged elſewhere; and what is truly ſurpriſing, they ſo place the carcaſe they are going to devour, that the head ſhould be to the eaſt, and the tail to the weſt, which poſition it is manifeſt, from the remaining ſkeletons, they never neglect. The crows are attendants, if I may ſo expreſs myſelf, on the devouring wolves, who led by the hope of prey, always and every where accompany them; and hence the Laplanders learn from their croaking that the wolf is not far off. The wolves themſelves after they have made a ſlaughter, and put the carcaſes under ground, uſually ſet up a howling. Thoſe of the rein-deer, a little more ſpirited, boldly oppoſe themſelves to the wolf, and ſometimes repel the invader, of which I remember a remarkable inſtance. A certain Laplander of the mountains, from the bay of Porſanger, by name *Mads Pederſen*, that is, Matthias, ſon of Peter, had a male rein-deer without horns: two wolves attacked it in the night, but with little ſucceſs, for on the next day the marks of the conteſt were viſible in the ſnow; by which it moſt clearly appeared that the conquering rein-deer had overthrown both the wolves, and that they had conſulted their ſafety by flight. The rein-deer, though he withdrew from the conteſt, as ſuperior in it, was found, having exhauſted his ſtrength, at ſome little diſtance from the place of conteſt dead. The wolf generally ſpares the rein-deer if tied up; but if, terrified, he extricates himſelf from his faſtenings, and takes flight, he inſtantly purſues the fugitive, and, unleſs through ſwiftneſs he eſcapes the enemy, miſerably kills him. But by no probable argument is it proved, though ſome have with too much confidence affirmed it, that wolves moſt eagerly thirſt after the blood of a pregnant rein-deer, and that they prefer the ſlaughter of it to that of men; a property of this is aſcribed elſewhere to bears, by thoſe who are learned in natural hiſtory.

Beſides theſe in the management of the rein-deer among the Laplanders, the following are to be noticed. The Laplanders impreſs a mark on the ears of their rein-deer,

that each may be enabled by it to diſtinguiſh his own. They take care that the rein-deer, leſt they may be ſcattered, and thus carried out of the way and into pathleſs places, ſhould be led within the ſpace of every civil day twice to the cot to reſt, and twice into the foreſt to paſture, which they repeat continually night and day, not intermitting it even in the middle of winter, when each night, from the ſetting ſun to day-break, contains at leaſt ſixteen hours. Nor is there any one, I think, who is but ſlightly ſkilled in the principles of aſtronomy to whom it is unknown, that the ſun in that climate altogether recedes from the horizon for ſeven weeks together, and that lying under the lower hemiſphere, leaves for full day but the twilight of a few hours; which yet is not ſo dark, with a pure and ſerene air, but you can do without a candle from ten in the morning to one at noon for writing and other buſineſs of this ſort, even when the days are ſhorteſt. And ſince the ſun, as mentioned above, altogether draws off its light from the horizon of that zone at a certain ſeaſon of the year, it is eaſily inferred that the leſſer ſtars are viſible on the ſhorteſt days about noon, and that the moon itſelf ſhines not only by night, but all the day. After the ſpace of ſeven weeks the ſun returns, to reſtore that delightful light to man and beaſt, as it were with uſury; for the day in a ſhort time takes ſuch and ſo great an increaſe, at the beginning of April, that the whole darkneſs of the night begins to diſappear. And as the winter's ſun withdraws its light for the whole ſpace of ſeven weeks, and makes the day at its ſhorteſt; ſo the ſummer's ſun, in turn, repairs that loſs, the nocturnal and diurnal light laſting for the ſpace of as many weeks: where it is to be well obſerved, that the nocturnal light of the ſun is much more dull and remiſs than the diurnal, and that the ſun itſelf by night has a reddiſh appearance. But I now return to the rein-deer. Led home to reſt, they lie down about the cottage, and when down form accurately a full circle. The watch dogs, of which ſome are named *Kiepros*, others *Gonſak*, others by other names, are employed in driving the rein-deer into the woods and meadows to paſture. They run about in the paſtures here and there, removing the ſnow by their heels, if any, in order to get at the muſc that is under; they are under the care of herdſmen, without regard to time and ſeaſon, whether good or bad. But though the ſhepherds take the greateſt care of their herds, yet it happens ſometimes that when they are ſheltering themſelves behind large heaps of ſnow, where driven by the violence of the tempeſt, they ſometimes retire, when overtaken with ſleep, one or two rein-deer ſtraying from the reſt of the herd, fall the prey of the watching and invading wolf. The care and duty of feeding and guarding the herd properly belongs to the children and ſervants of the family; yet I have known a married woman, who not having either ſervants, or a grown-up family, to whom the care of feeding the cattle could be committed, ſhe herſelf undertook the duty of paſturing, and having a ſucking infant at her breaſt, was obliged to carry it with her into the woods and pathleſs haunts, whilſt the ſky was all over darkened with ſnow and hail as thick as poſſible. The rein-deer are brought home from paſture by the aſſiſtance of dogs; nor could they be otherwiſe gathered, as feeding at large through the meadows, they go ſeparated at conſiderable diſtances from one another. The watch dogs are ſo inſtructed, that they obey the nod alone, the finger of the herdſman; hence the rein deer, admoniſhed on the ſight of the dogs, inſtantly will collect themſelves in herds: when collected by the help of dogs, they are driven to the cot by the herdſmen. In winter the father of the family, or his wife, examining on this ſide and on that, uſually ſurveys the whole herd, now fed, and diſpoſed round the cot to reſt, to ſee if the whole are ſafe; whether any have ſtrayed, or fallen a prey to the wolf. There are Laplanders who are maſters of ſix hundred, and ſometimes of a greater number of rein-deer; to theſe it is difficult to know whether any one from ſo great a number has gone aſtray.

It appears then to be a cuſtom among the Laplanders of the mountains that the herds of rein-deer are, for the whole of the winter ſeaſon, alternately led to paſture and home to reſt; but in ſummer, the caſtrated deer, together with young ſteers and heifers, have the range of the woods and mountains free, and without the controul of the herdſmen. During ſummer certain female rein-deer have the freedom to range at large for ſome hours, with their udders clean and free from filth by the Lapland women, to whom this care is conſigned, to the end that the young ſhould have a full opportunity of ſucking. Afterwards they are driven into a fold, at the diſtance of ſome paces from the cot, which is made from the green branches of trees freſh cut, where the women, whoſe buſineſs it is, beſmear the udders of each of them with rein-deer dung, taken out from a little caſe made from the bark of the birch-tree, which they uſually carry under the girdle; which when done, they come out to paſture again for ſome hours, when the fence is opened, when the young is repulſed from ſucking, on account of the udder which is now beſmeared with dung. They now again compel the female rein-deer within the ſaid fence for ſome hours at paſture with ſwoln udders, and waſhing off the dung they milk them; which cuſtom for ſome days is practiſed with the greateſt care. There are young who diſregard the beſmearing of the udders, whoſe mouths are gagged as to take away all power from them of ſucking their dams. A Lapland woman, when going to milk a rein-deer, knowing it to be a wild one, and that it would with difficulty come to the milking-pail, keeps at a diſtance of a few paces from it, and flings the rope, the extremities of which ſhe held in her hand, over its horns, which when the rein-deer perceives ſhe ſtands ſtill, and lets the milker inſtantly approach her. Though they do not come up even to goats, in the quantity of milk they yield, yet ſuch is the number of them, that there is neither a deficiency of milk nor cheeſe.

A wooden log is put on the neck of the rein-deer to prevent their ſtraying from the flock, by running up and down, and which is an impediment to them in running. He is governed by a rein made from the ſkin of a ſeal, ſo that one end of the rein may be faſtened to the head of the animal, but the other may be in the hand of the leader, whom the rein-deer follows with a little diſtance between. They are managed by theſe reins alſo when drawing the ſledge.

The Laplander, when caſtrating his rein-deer, does not take out the teſticles, as is uſually done, by cutting open the fleſh, but, applying his mouth, bruiſes them at once. The name of the caſtrated rein-deer changes with his years; when two years old, it is *Vareek*, four years, *Goddodas*, five years, it is *Kuoiſtus-haerge*, ſix years *Makan*; but from the ſeventh year of his age he is called *Namma Lapak*, that is, completer or finiſher of his name, for from that time he no more changes his name.

The Laplander faſtens by a rope the rein-deer to a trunk, that he is going to kill, which, when done, he comes up to him and ſticks his breaſt with the knife, ſoon after repeating the blow. The rein-deer ſtruck with the blow of the knife, makes ſome turns, until he drops on his back on the ground, where, when he has lain for a quarter of an hour, the butcher comes up to ſtrip off the hide. Not a drop of blood comes from the blow of the knife, but the whole maſs makes for the entrails, where it is afterwards drawn out, infuſed and preſerved in the paunch of the animal. The hide, when taken off, is ſtretched on tenter-hooks, ſuch as we ſee uſed in the ſmoking of ſalmon.

That part of the ſkin which goes round the feet of animals, before the body is ſtripped, is taken off, and ſtuffed with ſhavings, that it ſhould the more readily dry.

The mountain Laplander reduced to diſtreſs, delivers up the few rein-deer that remain to him to other mountain Laplanders, to be protected and taken care of; he himſelf,

ſelf, with his whole family, emigrates to the ſea-coaſt, where, mingling with the maritime inhabitants, he gains a livelihood for himſelf and family by fiſhing.

From what has been largely mentioned it is clear, that the herds of Laplanders conſiſt of tame rein-deer. It happens but very ſeldom, that a tame or domeſtic rein-deer, getting by accident among the wild, contracts the ferocity of this new ſociety; but it is accident, and as I have juſt ſaid, very rare. It alſo happens, eſpecially in the autumn, at the time of year when this animal is moſt incenſed with deſires, that a wild rein-deer will mingle with a herd of tame, but that it is uſually at the expence of life, for, when ſeen, the Laplanders beſet and ſhoot him. The wild rein-deer thus mingled with the tame, now and then gets the opportunity of coupling with the tame female. The fruit of this embrace is called a mongrel, reſembling neither ſire nor dam in every reſpect, for he is leſs in ſize than the wild, and greater than the tame; for the wild ever exceed the tame in the bulk of their bodies. But thoſe born of parents of unequal ſizes are called *Baevrek*, by the natives.

CHAP. X.—*Of the Carriages, and Manner of driving, in uſe among the Laplanders.*

THE more opulent among the Laplanders make uſe of no other beaſts of carriage than caſtrated rein-deer; but thoſe of poorer condition, whoſe circumſtances are narrow and contracted, are obliged to employ females. The rein-deer deſtined for this purpoſe to be made fit for the yoke and vehicle, is to be well broken in by much practice. At firſt it preſents itſelf untractable and reſtiff, one time kicking up his heels wantonly, at another, obſtinately lying on the ground, whence he will not get up unleſs beaten, and not ſlightly, with the whip and club over the noſe. Some are even ſo indocile, that they will admit of no diſcipline whatever, for, when yoked to a vehicle, they ſuffer themſelves by no means to be governed, but, turning themſelves this way and that way, they make a winding path, not unlike to a bending ſerpent. There are others which are much more eaſily broken in, and become ſo tractable by the diſcipline they receive, that in the carriage they ſo ſlightly bound, as is ſeen from their track, marked in the ſnow. The Laplanders call the harneſs that ornaments the head of the rein-deer *Baggie*. The rein by which he is guided while driven, is not, as is uſual in riding-horſes, double, but ſingle, and ſimple, nor paſſed through the mouth of the beaſt, but with one of its extremities faſtened to his head, while the driver holds the other in hand.

A large collar ſurrounds the neck of the animal in the place of a trace, made up from the rough rein-deer's hide; to the border of this collar is faſtened a long thong, twiſted, from the ſkin of the ſeal or ox, which, running along the belly of the animal, is brought between the fore and hinder legs directly to the yoke of the ſledge, where it is faſtened to a ſtick for the purpoſe, called in Lapland *Jukko*, and to a ſmall ribbon, called *Jukko-Lauvzhie*. By means of this twiſted thong the rein-deer draws the ſledge, which, leſt in driving it may fret the legs of the animal, is covered with a hairy ſkin.

Beſide that larger collar, of which I have juſt now ſpoken, there is another leſs in ſize, called in Lapland *Rieſegas*, for ornamenting ſometimes the neck of the rein-deer of carriage; it is made of cloth, or texture of *Kerſey*, ornamented with threads of tin, and bordered with woollen fillets. This kind of collar, which is not uſed by all, nor at all times, is entire in the upper part and ſides, but below, under the collar, it is open, to be cloſed with a thong when occaſion calls for it; from this part too hangs a bell.

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The belly of the rein-deer is girt round with a broad belt, called in Lapland *Aagotas*, the outer part of which, touching the belly of the animal, is leather, but the upper, which comes round each ſide and the back itſelf, is of cloth outſide, or texture of kerſey, adorned with threads of tin, the leather being turned in. The lower part of the belt is ornamented with broad fillets of cloth of kerſey, drawn into a variety of bendings or ſpirals, partly of the colour of the girt itſelf, and partly of a colour different from it. This girt is an entire piece from the belly to the back, where it is faſtened by four ſmall ribbons, on the extremities of which are creſts, made from ſhreds of different coloured cloth, which diſplay themſelves for the greater ornament of the girt. But that theſe are merely ornamental, and uſed for that purpoſe alone is evident, that, when the king's treaſurer, together with his ſuite, Swediſh merchants, and other young Laplanders of quality wore theſe, they generally dreſſed the cattle on which they rode after this manner. Meantime theſe girts ſo frequently praiſed among them are not without their uſe; for thoſe that gird the middle of the belly, have in them ſmall apertures, through which, the ropes by which the rein-deer draw their ſledges, paſs, with this view, that they may not while drawing, ſtagger, or the vehicle be too much ſhaken. The *Aagotas*, or girt of this ſort, yet is not much in uſe; for very frequently they do without it, and the ſledge is not jogged more than uſual: and the reaſon is, that the rope by which it is dragged has a free paſſage between the legs of the animal while drawing. It is uſual with women, when driving, to put coverlets over the animals that draw, ornamented with bells laid in order. Beſides the ſaid ornaments with which the Laplanders ornament their cattle employed in carriage, there are alſo a few more in uſe, but of ſmall, not ſufficiently that we ſhould longer delay ourſelves in deſcribing them. The hairy collar by which the neck of the rein-deer is ſurrounded, the leſſer collar, or *Rieſegas*, to which the bell hangs, the girt from the ſkin of the rein-deer, and the whole remaining harneſs, for vehicles, are made by the women alone.

The rope with which the Laplanders of the Swediſh mountains faſten their rein-deer, when they wiſh them at hand, and ſometimes tie them to trees, is twiſted from the ſmall roots of trees, if ſome are to be believed on that ſubject.

The vehicle, or ſledge, in which the mountain Laplanders are drawn, is not unlike to a ſmall boat, (our people call *Spegl Baad*, on account of the ſhape of the ſtern reſembling, as it were, a mirror,) for in the ſtern of the ſledge, to make uſe of a ſea-term, is a ſeat, in form like a mirror, which falls down to the keel, but by riſing in the part above, props up the back of the driver. The ſledge is made of long planks, extending from the ſtern of it to the prow, a little bent, and put together almoſt in the ſame manner as the planks are in the ſtructure of ſhips, with this difference, that theſe are faſtened with iron ſpikes, but the others with wooden buttons or faſtenings. And that the planks ſhould the more cloſely and fitly lie together, nor through ill joining, through their joints, let in the water, they draw them together with oziers twiſted round and round, with their greateſt exertions. The ſledge has a keel or bottom of a ſpan broad, equalling the ſledge itſelf in length. The keel, in its lower extremity, projects a little beyonnd, in frot it is extended to the prow, terminating in a crooked beak. On the outſide, along eachſide of the keel, is drawn a plate. The ſledge is bound tight within with a variety of pieces of wood placed acroſs, as is uſual in the conſtruction of veſſels.

Vehicles, or ſledges, in uſe among the Laplanders are of four ſorts; the firſt is called *Giet-Kierres*, the ſecond, *Raido-Kierres*, the third *Pulke*, the fourth *Lok-Kierres*, each of which conſiſting of long beams, a keel, as above mentioned, furniſhed with a prow and ſtern. But among theſe vehicles or ſledges there is a difference, though minute. The ſledge, which in Lapland is called *Giet-Kierres*, that is, the hand-ſledge, is princi-

pally

pally in uſe. This above from the ſtern to the prow, is quite open, and ſo ſlight that it can be carried in hand any where; ſo ſhort, that the driver can touch at once with his back the ſtern, and the prow with his feet: ſo narrow as to ſqueeze on each ſide the ribs of him, who ſits in the fore part of it, ſo low that the driver if he inclines but a little on either ſide, he may touch the ſnow with his elbow. He takes care, who drives, to put a ſkin under him, to ſit ſoft upon. The ſledge which is called *Raido-Kierres*, is a waggon, fitted for receiving and carrying parcels: it is rather longer, broader, and deeper, and ſince it is open as well as the other, when laden, it is covered over with ſkins of rein-deer, or ſome other covering. The covering, with which the waggon is tight bound, leſt the parcels ſhould be injured by rains and ſnows, is made of a thick yarn, twiſted from the fibres in the feet of the rein-deer, and often faſtened round, as is uſual in coverings braced up tight. No apertures are ſeen in the ſides of the waggon, by which the binding thread is paſſed, but it is inſerted in certain handles in the ſides which are added for this purpoſe. The ſledge called *Pulke*, is fit for exerciſe, and is beſmeared on the outſide with pitch, after the manner of a boat. It reſembles in every thing the ſledge called *Giet-Kierres*, with the exception, that this is opened behind, before it is covered with the ſkin of a ſeal, which goes from the prow to the knees of the driver, but all the reſt is open. Another woollen covering is attached to that of the ſeal ſkin, which coming over the lap, the rider keeps the ſnow heaped in on him whilſt driving; but it is drawn together in the ſame manner, as the covering of the ſledge *Raido Kierres*, of which mention has been made above. He then who ſits in this ſledge takes care to cover his feet with the ſkin of the ſeal, and his lap with the woollen covering drawn tight together with thongs, ſo that the upper part of the body alone is unſheltered and expoſed. Beſides ſkins to ſit on, as I have noted above concerning the ſledge called *Pulke*, are laid under the drivers. The ſledge which in Lapland is called *Lok-Kierres*, is beſmeared outſide with pitch, and ſerves for carrying proviſions. It is a little larger than the above-mentioned *Pulke* and *Giet-Kierres*, made from planks fitly joined together, as not to ſuffer a drop of water to paſs through. It has a wooden deck, as in ſhips, running from the ſtern to the prow, but which riſes a little in the middle, and comes out with a round ſwelling, whereas the deck of ſhips are levelled by rule and plane. A bolt is fixed to the extremity of the deck, at the ſtern, which, when any thing is wanted out, is opened and ſhut again. The Laplanders raiſe up their ſledges, beyond their ordinary uſe, about their cot, in a certain wooden machine called, *Bildagak*, and made for this purpoſe, (though very frequently they roll them on the ſnow,) that they ſhould ſerve the purpoſe of cupboards, for keeping the raw meat of the rein-deer and other neceſſaries of ſubſiſtence.

Concerning the mode of driving and of carriage, and what it is in among the people of that nation, the following obſervations come into uſe. When any one is ready to drive, he firſts puts on his gloves, with the hairy ſide turned inſide, which when done, ſitting on his ſledge, he faſtens to his right thumb the rein, the other extremity being faſtened to the head of the rein-deer, who is quiet with the rein reſting on his left ſide.

The Laplander ſitting in his ſledge, and juſt going to let off the rein-deer, after ſhaking very ſwiftly the rein, hits him on each ſide, on which ſtarting forward, he diſpatches the longeſt journies with an incredible ſpeed. And as the rein-deer in running does not go in a ſtraight line, but turns this way and that about, there is a neceſſity that the driver ſhould direct him with the rein, that he ſhould reach the place, whither he intended. If he is to turn to the right, the driver hits the rein on that ſide, and ſo by turns. Hence it is that the track of a ſledge in the ſnow, on account of the unſteady

gait of the rein-deer who draws the ſledge, repreſents the figure of a ſerpent, winding and rolling into a variety of ſpirals. When the Laplander is in haſte, entering on his journey, he does not idly, as at other times, ſit in his ſledge, but falls on his knees. If he wants to ſtop, in driving, the rein is thrown from the right ſide to the left, and there reſts; when done, the rein-deer inſtantly ſtops.

Should it happen, that any one is inſufficient alone for the management of the animal which draws him, as being too untractable and unmanageable in the courſe, he then gives the rein to his friend, next before him, which he faſtens to his ſledge, and in this manner he draws the driver together with his rein-deer and ſledge after him.

And ſince the rein-deer who draws, as mentioned above, draws the ſledge by a ſingle ſlender and looſe rein, it neceſſarily follows, that the animal going through declivities, cannot poſt with ſuch ſpeed, but the ſledge, as ſlippery and full on its way, muſt be borne with a greater celerity, ſo that it muſt either ſtrike on the hinder feet of the rein-deer, or even out-ſtrip him in ſpeed; to remedy this inconvenience as it ſometimes happens, another rein-deer is faſtened to the ſledge behind, by a rein put over his horns, leſt by too much haſte it may incommode the animal that draws, who will be retarded by the reſiſtance and efforts of the other.

There are rein-deer who thus put behind, ſo far are they from retarding the ſwiftneſs of the ſledge, willingly following it, aid and incite it as it ſpontaneouſly moves on. Others are of ſuch a diſpoſition, ſo obſtinate and perverſe, that after the firſt experiment they are rejected.

Riding through hills that are not ſo ſteep, there is no need of this method of checking the ſledge, as the driver himſelf, by a certain motion of his body, and a certain expertneſs in drawing, can eaſily direct the ſledge in which he ſits, which way he pleaſes.

But when he has to travel through places almoſt ſteep, and well nigh broken into precipices, it is uſual then to join to the ſledge a rein-deer, and when thus joined to, negligently faſten him to the hinder part of the ſledge, leaving the ſledge to its free courſe, where chance ſhall carry it.

Parcels, in the ſaid ſledges, called *Raido-kierres* are thus carried: the driver of the ſledges ſits firſt in order; another rein-deer follows bearing the ſecond ſledge, faſtened by a rein to the firſt: then a third, fourth, and ſometimes more, each carrying his own ſledge, follow in like order. The driver who ſits in the firſt, regulates all following in order. Some one rein-deer cloſes the troop without a ſledge, but following for the purpoſe, that if the occaſion ſhould call for it, he ſhould check, by his effort, all the ſledges running with too much celerity along the declivities as mentioned above.

It ſometimes, and but ſometimes, happens that the ſnow increaſes to that height, that the rein-deer cannot break through them, on his way. I have been myſelf carried through ſnow, ſo high, that they have equalled the back of the animal, and not ſeldom, by which, it is eaſy to be judged, that travelling is at ſuch a time, very ſlow and gradual.

CHAP. XI.—*Of the Journies of the Laplanders.*

THE Laplanders of the coaſt, change their habitations only twice a year, in the ſpring and autumn. When changing their abode they do not take down their huts as the mountaineers, but only forſake them for a time, until they may return. The mountaineers on the contrary, juſt as the ancient Scythians, mentioned in hiſtory, have

done, and as the Arabs and Tartars do to this day, are ever changeable, vagrant, and not contented with the ſame ſituation and place long together. The mountain Laplander takes himſelf, together with his whole family, and the herd of rein-deer, to the coaſts and borders that lie neareſt the ſea in the midſt of ſummer.

But when the autumn is coming on, he retreats again with his cot, his rein-deer and family to the mountains, ſlowly and by degrees; for getting on his way, and having moved ſcarcely the diſtance of a mile, he ſtops, and going on the next day, he only advances one mile, which he does every day, until the winter, now at hand, after paſſing the creeks a diſtance of five, ſix, or about ſeven miles from the ſea, he has penetrated to the very confines of Swediſh Lapland; where when he has at length arrived, he ſtops, but not ſo at to prevent his moving with his cot and rein-deer, from one wood and hill to another, as neceſſity ſhould require.

On the approach of ſpring, he returns in the ſame manner to the ſea coaſt, but ſlowly and as juſt ſaid, ſtep by ſtep, until he has arrived with his family in that place, where he has determined to remain the whole ſummer.

On the ſides of the roads, through which he is to travel, he takes care, that a number of little offices ſhould be built, in which he puts up his proviſions and furniture, which, during winter, he draws out, when he pleaſes, and when it is neceſſary, for himſelf and his family. When the mountain Laplander is preparing for a journey from the coaſt to the mountains, at the end of the [illegible]n, he uſually kills ſome rein-deer, at this ſeaſon, which are very well fatten[illegible] in his houſe, which he has for the purpoſe, the meat, in order, that [illegible]pring, by the ſame road, he may have proviſion for himſelf and [illegible]

The mountain La[illegible]ummer, and autumn ſeaſons of the year, when travelling over the p[illegible]d bare from the ſnows, with his family and rein-deer, travels on foot, having put the cot with its timber and furniture, and other baggage on the backs of the rein-deer; if the mother happens to have an infant at her breaſt, ſhe carries it on her back, put up in a hollow piece of wood, called in Lapland, *Gieed'k*, which I have deſcribed above in Chapter VIII. on the furniture of the Laplanders. The herds of rein-deer, on their way, as at other times, are managed by their keepers.

The mountain Laplander travelling in the winter ſeaſon through plains covered with thick ſnows, before he begins his journey takes down his cot, the planks of which this building chiefly conſiſts, the covering drawn over it, the timber of the floor; the fire ſtones, he takes, with him, with the view, leſt the want of materials of this kind ſhould render the place into which he is diſpoſed to emigrate, incommodious to him; but he uſually flings away the branches with which the floor is covered, cutting down, in the place he erects his cot, new ones in their place.

The cot, with all its materials, is put into a ſingle ſledge called in Lapland, *Guatte-Kierres*, which by the help of a ſingle rein-deer, an animal neither ſo great nor robuſt, is drawn through the thickeſt ſnows, whence it is eaſy to be inferred that the cot itſelf, with all its furniture, is of ſmall ſize and conſideration.

The mother puts the infant, before the huſband enters on his journey, into a hollow piece of wood, *Gieed'k*, mentioned before, ſlightly covered with woollen cloaths, yet with that precaution, that a ſmall aperture may be open before the mouth of a child, by which he may breathe freely.

Their own baggage is carried alſo in the ſledge. The huſband himſelf goes on firſt, and leads on the troop. The mother manages the ſledge, in which the infant is, who,

ſhould it begin to cry much, inſtantly ſtops the ſledge, and getting at the ſide of it on her knees, gives her breaſt to the babe through the aperture I have juſt mentioned, regardleſs of the ſeverity of cold or ſnow.

The children, with the reſt of the family, manage and take care of the herds of the rein-deer. In what manner the baggage is carried has been deſcribed in Chapter X. concerning the kinds of carriage among the Laplanders.

It is wonderful and ſcarcely credible, unleſs one had ſeen it, that the Laplander, travelling in winter, over vaſt mountains, and trackleſs haunts, eſpecially at that ſeaſon, when all nature is covered and whitened with a conſtant ſnow, to a degree that neither the ſtones nor the leaſt part of the earth can be ſeen, nor any other trace of human culture, and when the ſnows, agitated by the winds and whirled in circles, take away all uſe of ſight, can find his way to his deſtined place, and without miſtake. What I am relating I write from experience; for indeed, it happened to me not rarely, either that through clouds of miſt and darkneſs, with which the ſnow driven round in a whirlwind darkened my ſight, that I could not ſee the beaſt by which I was drawn, on which occaſion truſting to the Divine guidance, and the faith of the driver, after the manner of the blind, I ſuffered myſelf to be carried, not knowing where I was going.

But it appears from experience, that neither enormous heaps of ſnow, nor the horrid darkneſs of the night can obſtruct travellers, from arriving ſafe and without errour at their place of deſtination. They uſually hang bells from the necks of their rein-deer of carriage, that if they ſhould not diſtinguiſh by ſight, they might at leaſt know each other from hearing. They follow the wind too, if it is not veering, as a guide, ſo that if the place they are going to is to the ſouth, and that the wind ſhould ariſe in this quarter, they begin their journey directly in the teeth of this wind; if it is a ſouth-weſt wind, they go in ſuch a manner as to have the wind on their right hand; if its to the eaſt, they contrive to have it on the left. Should they chance to ſee the ſtars ſhining on the way, they direct their courſe, with confidence, by the northern ſtar. For though the Laplanders have never learned the ſcience of the ſtars, yet they know the various ſtars and their ſituation, and deſignate them by certain names: for inſtance the Pleiades in Lapland are called *Nieid-Gjerreg*, that is a company of virgins; the fiſhes in the zodiac *Oaaggo*, that is the fiſher; the morning ſtar is *Guouvſo Naſte*; another ſtar, *Sárva*, that is the male rein-deer, others by different names.

As it is aſſigned to Divine Providence and to it alone, that a ſhip in the midſt of tempeſts, among threatening waves, quickſands, and ſhoals, and darkened clouds, ſhall be unhurt, ſo is it no leſs an argument of the protecting care of the Deity that a human being ſhall paſs ſafe, and ſecure, through pathleſs haunts, through mountains covered with conſtant ſnows, through the perpetual attacks of hail, of ſnow, and whirlwinds, forming themſelves as in a troop in the very face of the traveller, and drawing on a darkneſs thicker than the moſt darkſome night. For thoſe, who are obliged to travel, diſcover themſelves ſo often ſurrounded by precipices and high mountains, that if they ſhould err in the leaſt from the way, they would neceſſarily run into the moſt imminent danger of their life; a melancholy inſtance of which truth, we have had not long ago in one Siver Henrikſon of the Lapland youth, then in Porſanger, while I was miſſionary at the ſame place, who, when driving, ſtruck his breaſt againſt a tree in the way by turning a little out of the courſe, which occaſioned his ſudden death, which followed three days afterwards.

The Laplander is furniſhed on every journey through winter with utenſils for lighting a fire, a ſteel, a flint, tinder and ſulphur, all of which he carries in his boſom incloſed in a bag, or little box, in order that when there is occaſion, he may kindle a fire, or light his tobacco pipe. For it happens, and that not ſeldom, what I myſelf experienced more than

than once, that travellers, obſtructed either by the thickneſs of the ſnows or length of the way, are obliged to paſs whole nights under the open air. Whenever this happens, the Lapland traveller erects a ſmall tent, made of very coarſe linen, which he always has at hand, on the ſnow, and lighting a fire refreſhes his body. In winter whenever occupied in religious affairs, or engaged in any other buſineſs, they tie the rein-deer that draws them to a tree or trunk not far from them in the wood.

On the maritime excurſions of Laplanders nothing occurs which can long detain the curious reader. It is ſufficient juſt to mention that they always have a tinder-box with them, and when the occaſion requires it they can light a fire and their pipe of nicotiane, or get ready their meat; for they are ever ready, if they happen to catch a fiſh, immediately to land on the next coaſt to them, and lighting a fire between two ſtones, which they chuſe for this uſe, and hanging the pot by a pole, with each end propped on each ſtone the fire-place is made of, boil the fiſh they have caught. In the ſame manner they prepare meat for themſelves from the otter or any other wild beaſt they might kill on the way.

From what has been hitherto narrated, it is abundantly manifeſt that the ſtate and condition of this nation is, beyond deſcription, reſtleſs and hard; but ſince the ſufferers are accuſtomed to this kind of life from their childhood, they are held by ſo great a love of their native ſoil, that ſcarce any other nation, enjoying the moſt happy and munificent bounty, can equal them: in confirmation of this aſſertion it will be ſatisfactory to read the following hiſtory. When his majeſty the King, of moſt glorious memory, Chriſtian VI., on his journey which he undertook through the kingdom of Norway in the year 1733, had ſtopped at the gulf of Aalefund, in the diviſion of the province of of Sundmoer, he honoured me moſt humanely, through the favour of Andrew Roſenpalm, admiral of the fleet, and a moſt worthy gentleman, with an audience on the twenty-ninth of July; which day, as it was to me moſt propitious and deſirable, ſo ſhall its remembrance never fall from me. It was agreeable to his moſt royal Majeſty to propound various queſtions concerning the miſſion to Lapland, on merchandize and other matters reſpecting Finmark, and in his goodneſs, truly royal, to hear my humble anſwers, and then to mark with his royal hand, which I humbly repeat, the name of his moſt liege ſubject in his diary, in ſign and token of future promotion, after the ten years miniſtry in Lapland. His Majeſty then enjoined on me that I ſhould moſt humbly take care that, as ſoon as poſſible, ſome of the young men of Lapland ſhould be ſent to him at court. I obeyed, as I ſhould, the commands of my ſovereign; but who could imagine that any perſon could be found who would refuſe ſo munificent a condition? But all did refuſe. At length a young man, whoſe name was Nicholas Peterſon Korſnæs, with ſome difficulty ſuffered himſelf to be prevailed upon to go to Copenhagen. This young man was of a middling ſtature and figure. There were others who could have recommended themſelves by ſtature and comelineſs in a greater degree, among whom was a young man from the gulf of Alten, of no common degree, of manly beauty among that people, whom Ind eavoured to prevail on by loading him with promiſes to go to Copenhagen, and would have ſucceeded without doubt had not his mother oppoſed it tooth and nail, who, at that time pregnant, came to me, aſſuring me in form, that it would be a ſcruple of conſcience to me ſhould I rend from her the only and dearly beloved ſon ſhe had, and that I ſhould ſuffer for it in the juſt judgment of God, if any accident had conſequently befallen her, and the birth near its time, through grief. But I return to Nicolas Peterſon. As ſoon as he arrived at Copenhagen he was, for his condition, indulgently received, and handſomely entertained by his Majeſty. He was dreſſed in coſtly cloaths, whoſe borders and lower extremities were diſtinguiſhed by ſilver trimmings, yet ornamented in the Lapland faſhion. The bonnets in common uſe among the Laplanders are trimmed with

with a border from the ſkin of the otter; but the cap of this youth was ornamented with a fringe of ſilk-velvet, of black colour, with a facing of the ſame, illuſtrated with the name of Chriſtian VI. in ſilver ornament. But this proſperity was not durable; for on the approaching autumn, and the fall of the year, he fell ſick, and died on the beginning of the following year. The cauſe of ſo ſudden a death without doubt is to be ſought for in ſo ſudden a change of air and food; for he who at home was uſed to drink of one ſpring, and that cold, and ſubſiſt on the congealed milk of rein-deer and ſuch food, now regaled abroad with wine and dainties, could not bear this unuſual and ſudden change without danger of life; according to that very melancholy ſaying, every ſudden change is hurtful. The body was honourably interred at the King's expence, and the cloaths his Majeſty ordered him to be dreſſed in were ſent to Lapland to his parents, that under their wretchedneſs they ſhould recall the memory and once happy condition of their deceaſed ſon to their conſolation.

When, as above mentioned, I had to pay my profound reſpects to his Majeſty, at the time he happened to come to the gulf of Aaleſund, in the province of Sundmoër, I had arrived there, for the purpoſe of marrying Sophia Aletha Ruberg, three weeks before his Majeſty. I had at that time in my family a Lapland young man, of the name of Peter Jonſen, who had ſo recommended himſelf to the attention of the high admiral, Roſenpalm, that he was diſpoſed to take him to Copenhagen and put him among his rowers: and as the youth had capacity, his highneſs took care that he ſhould be taught writing and arithmetic; when taught, he ſent him to the Eaſt Indies, to acquire under a ſkilful ſeaman, a knowledge of nautical affairs; but returning from India he fell ſick and died at Copenhagen.

CHAP. XII.—*Of the wild Beaſts and Birds of Finmark, and of the Modes of catching them, uſed among the Laplanders.*

AS many writers, verſed in natural hiſtory, have long ſince employed their time as diligently as ſucceſsfully in inveſtigating and deſcribing the properties of the nature of quadrupeds and birds, it would appear ſuperfluous here to reſume the ſame ſubject. Poſtponing that conſideration, I propoſed to mention ſome of the modes and arts which the Laplanders uſe in taking them, and alſo ſomething of the ſingular qualities of certain quadrupeds and birds, and other matters belonging to them.

Moſt of the kinds of quadrupeds, of a wild nature, which are found up and down through Norway, Finmark produces in no ſmall number; which advantage of their country the Laplanders know well to turn to their own uſe. But it is to be particularly noticed, that the inhabitants of the mountains, abounding above the reſt in a great quantity of rein-deer, have very ſeldom leiſure for the chace, nor is there need they ſhould, when they are ſo very much occupied in watching and paſturing their herds; and they can well forego this laborious and unquiet mode of life, furniſhed as they are beſides with an abundance of thoſe things they have uſe of.

Finmark both produces and breeds a great number of wild rein-deer: theſe, called *Godde* by the inhabitants, by far exceed the tame ones in the bulk of the body. The Laplander going out to hunt, in ſummer and autumn, the rein-deer, takes with him his well-ſcented and ſagacious dog, whom, as a guide that will not deceive him, he follows, hunting by the ſcent, until he comes up in view to the wild rein-deer. On the ſight of the animal he muzzles the dog, leſt he ſhould frighten him by barking. Should the bullets he uſes, when firſt ſhot, not kill him, but only mortally wound him, he drives the dog, now freed from the chain and muzzle, on him as he flies, who ſtopping now and then in his ſpeed, in order to defend himſelf with his horns againſt the dog, is ſhot at and killed by the Laplander, who makes good uſe of the opportunity. During autumn,

tumn, when the rein-deer meet for the purpoſe of procreation, the Laplander goes with ſome of his rein-deer, tamed for that intent, where he knows that the wild ones meet, and there faſtening ſome to trees with halters, ſuffering others to ſtray at large, he places himſelf in ambuſh. The wild rein-deer ſcenting the females, inſtantly flies to them, but falls a prey to the Laplander lying in wait for him. It happens ſometimes that two at once come: theſe ſharply contending for the female, ruſh in on each other with their horns, with commonly no other termination of their conteſt, than that each of the competitors ſhould fall under the arms of the Laplander.

The Laplander, when hunting the wild rein-deer, in winter, cloſely follows the traces of the ſtraying animal until he comes up in view of her: on ſeeing her, he faſtens the rein-deer of his ſledge to the next tree, inſtantly on foot to purſue. In ſome parts of Lapland wild rein-deer are taken in the following manner: the ſnows being collected in ſuch heaps that the rein-deer cannot get over them, and the outſide of theſe heaps ſo incruſted with ice, as to break under the tread of one of them, but yet able to bear the weight of a man with wooden ſhoes, the Laplander, furniſhed with ſuch ſhoes, goes out to hunt the rein-deer, who while running over the ſnow lightly incruſted, and diſappointing his ſteps, gets entangled. In this ſtate he cannot eſcape the hunter, coming ſwiftly in his wooden ſhoes upon him by his accuſtomed celerity, but transfixed with the hunting ſpear, becomes his prey. The taking of the rein-deer is effected in other places by the following method: in places where the ſaid beaſts uſually range, a certain opening, like a gate, is made, in which a loop is hung, made of the thicker fibres taken from the ſinewy parts of the rein-deer; this the animal, ſtraying without caution, and fearing nothing, enters by chance, and inſtantly falls into the ſnare. In certain tracts of Lapland the rein-deer were taken wild formerly in this manner: a very high incloſure was erected from a piling of a great deal of wood, two greater arms or horns alternately projecting themſelves, ſo that a great ſpace ſhould be open between the extremities of each arm, but behind ſo gradually coming together, as to terminate in a narrow aperture, in the appearance of a narrow gate. When this incloſure was ready, the hunting, when an opportunity offered, was propoſed, and in this very manner: the wild rein-deer were compelled into the incloſure by a ſpace, lying open between the two arms that were ſeparated, who the farther they went in by flight, the nearer were they to the inward extremities of the ſaid incloſure, where theſe ſeparated arms again united in the form of a narrow gate, from whence they neither would nor could eaſily get back, leſt preſſed from behind they ſhould fall among the hunters. A way out through the ſaid narrow opening was therefore to be ſought by them in this miſerable plight, which when found with difficulty, a ſtooping hill ſoon preſented itſelf, along which they ran in a precipitate manner, when a new incloſure again preſented itſelf, which ſeeing they could not get over, nor, by reaſon of the ſteepneſs of the hill, paſs without difficulty, were forced to ſurrender. This mode of catching rein-deer was formerly in uſe among the Varangriens, who even from that kind of chace are held to pay a tribute of nine rein-deers, or in defect of rein-deer, as many fox ſkins, to the King's governor of the caſtle of Wardhus. It was uſual alſo among the Laplanders formerly, that they ſhould drive the rein-deer they propoſed to take into the next neareſt lake, having placed men on the farther bank to attack them when ſwimming over. It is related by ſome one, that the women of Lapland are not leſs addicted to hunting than the men; this I never obſerved, and never even heard a word of.

There are no deer nor elks in Finmark. That an elk, as a certain writer lays down, much yields to the rein-deer in ſize is very falſe; for it is ſufficiently well known that one elk, of juſt ſize, at leaſt equals three full grown rein-deer, and thoſe the largeſt of their kind, in the bulk of the body.

Hares

Hares are bred in great numbers in Finmark. This wild animal is called by ſome of the inhabitants of Norway *Taſe*, but by the Laplanders *Njaamel*. Hares found in this tract of country during winter, are of a white colour, but in ſummer of a grey, as they are elſewhere. Beſides the gun, the moſt uſual inſtrument of killing wild animals, other methods and arts are in uſe for catching hares. In thoſe places where hares uſually haunt, ſnares conſtructed from ſmall ſticks and cords artificially put together, are fixed in the ground, in which the hares, ſtraying without caution and freely among the trees, frequently run into the trap and are taken. They are caught too by a certain iron machine, deſcribed in another place. The Ruſſians pay for each hare's ſkin eight-pence. The Swedes are ſaid to make coverlets from theſe kind of ſkins.

In Finmark, not leſs than through the remaining tracts of Norway, are found bears. The bear in Lapland is called *Guouzhia*, the word denoting the male and female of this animal. But the Laplanders alſo diſtinguiſh the male and female, the male is *Aenàk*; the female is *Aeſte*; the Norwegians generally ſay *Bingse*. The rein-deer eaſily eſcape the bears by the fleetneſs of running; cows, goats, and ſheep are much more expoſed to their cruelty and rapacity. That the Laplanders of Indragria, in Sweden, were compelled to bury the bodies of their deceaſed friends, in certain little iſlands, ſcattered in the lake of Indragria, leſt they ſhould be a prey to the voracity of bears, has been handed down to us, but for the truth of the relation I cannot anſwer, relating only what I have heard. The bear is wonderfully delighted with certain blue berries, in Norwegian called *Blaabaer*, a great abundance of which is found in this country: but he alſo feeds on graſs. The Laplanders in common ſhoot their bears with grooved guns, which are only in uſe among them. If the bear does not fall with the firſt bullet, but is only wounded, he inſtantly returns to take vengeance for himſelf, and often not without effect. But theſe wild beaſts are taken not with ſhooting alone, but by other modes and ſtratagems. It is a matter well known and aſcertained through the regions of the north, that the bear, during the winter, lies concealed in his den, and that he is there ſuſtained by no other aliment, than a certain milky juice, which he ſucks from his fore paws with a growling. It not ſeldom occurs, that the Laplander, going to hunt birds, ſquirrels, and other game in the woods, accidentally falls on the haunt of a bear laid up for the winter, by the aſſiſtance and guidance of his hunting dog, ſtanding and barking at the den, he has found out by the ſcent. The Laplander obſerving this, puts in the bow with which he deſigns to kill birds, (for bows, it appears, are in uſe as yet in ſome of the countries of Lapland,) to the aperture or door of the den, while the bear is ſtill careleſsly at reſt, and not attempting to come out. He then cuts off branches from the fir-tree, if at hand, if not, from any others in his way, by which he ſhuts up the mouth of the den, drawing out firſt his bow with caution, yet in ſuch a manner that it ſhould not be altogether cloſed up, as there muſt be a ſmall aperture for the bear to put his head through. Things thus arranged, the Laplander armed with an axe plants himſelf before the door of the den, in order to irritate the bear by every means and threat in his power, until he, provoked in the extreme, ſhall riſe, prepared to attack the enemy, ſo wantonly challenging him and provoking him. The bear then thruſting his head fiercely through the narrow aperture that is made, is hit, or, in plain terms, receives a mortal blow from the Laplander, with the axe, which, if it has ſtruck the upper part of the face is almoſt harmleſs, but if the lower part and next the eyes, the blow immediately cuts off the head of the wild beaſt. The Laplanders purſue a different method in other parts of the country, and in the following manner: When they have found the place where a bear has perhaps killed a wild beaſt, but having killed it, has ſoon quitted, they ſurround; by a certain incloſure furniſhed with two doors, made in the form of an opening gate,

gate, and directly oppoſite to them, the carcaſe that is killed and juſt left behind him. Near each aperture or gate of the incloſure are laid various bows, ſtretched and furniſhed with arrows, the height of the bear, as well as can be conjectured as accurately obſerved, with this view, that they may directly ſtrike to the heart of the wild beaſt, entering by the door of the incloſure to his prey. A rope is extended near the ground, on the touch of which the arrows are ſhot. The bear returning to his prey, enters the incloſure by one of the ſaid gates, and treading on the ropes, falls, pierced by the arrows, provided they ſtrike with exactneſs. That the ſaid incloſure is furniſhed with two doors they aſſign as a reaſon, partly, that a free paſſage ſhould be open to the bear, on each ſide, when he returns to his prey, partly, that if by chance he ſhould eſcape the arrows placed at the gate by which he entered, he ſhould more certainly fall by thoſe which were placed at the other. They alſo extend a rope with drawn bows on each ſide in ambuſh, on the walks and paths where they know bears ſtray up and down, with the view that, treading on the rope, and the arrows being ſhot, he may receive a death wound. The Laplander makes uſe of the aſſiſtance of dogs in the hunting of bears, as well as rein-deer. He thoroughly rubs his limbs, when they exceedingly ache, with bear's greaſe, which is laid up; the inteſtines of the animal that is killed are anxiouſly preſerved, with this due obſervance, that the fat of the male bear may be uſed for the cure of the males alone, and what is taken from the ſhe bear for the females.

The lynxes, called by the Norwegians *Goupe*, are by the Laplanders *Albos*, are not to be met with in Finmark; this defect however is ſupplied by the great number of wolves. Of theſe, ſome are yellow, ſome of a colour inclining to white. This wild animal, according to the different dialects of places, gets different names, ſuch as, *Barg*, *Graabeen*, *Sfrob*, *Sfrog*; the Laplanders call them, *Kumpi*, *Stalpe*, *Seibek*, *Gaine*, *Olgobutzh*. The Laplanders moſt uſually kill wolves with guns; they take them alſo with a certain iron machine, of which we ſhall below give a deſcription. The moſt uſeful of theſe traps hold a wild beaſt ſo cloſely, that ſhould they only catch the nail, yet they can retain him, which, from the following account will be manifeſt: A certain mountain Laplander from the bay of Porſanger, called Andrew Jonſen, once caught a wolf in one of thoſe approved machines, which, though only held by a ſingle nail, and running beſides with ſo great ſwiftneſs, with the machine that he carried with him, that the Laplander, though carried by his rein-deer, a very ſwift animal, could ſcarcely overtake him as he fled, yet ſo cloſely did the trap hold him, that he could by no means extricate himſelf and eſcape. But, whatever more of the nature and habits of this animal could be mentioned, occurs in Chapter IX. on the rein-deer. Wolf-ſkins are ſtretched on wooden tenter-hooks, called in Lapland *Ratzh*.

Foxes are found in great numbers through Finmark. Of theſe many are red, called in Lapland *Ruopſok*; others are red marked with a black croſs, whence they are called by the Norwegians *Kors-Roeve*, that is, red foxes, but by the Laplanders *Raude*: others are altogether black; others black, with the extremity of the hair on the back ſhining with a colour like ſilver. Foxes of this ſort, called in Lapland *Zhjaeppok*, whoſe ſkin, as being the beſt of their kind, were reſerved under the injunction of an edict, publiſhed on the 25th of May, in the 52d year of the 17th century, for his Majeſty alone; they are now ſold without reſtraint to the Muſcovites, who make garments of them for men filling the higheſt dignities. The Ruſſian women of inferior condition, are ſaid to wear caps or hoods trimmed with red fox-ſkins. Beſides the ſaid ſpecies, there are white foxes found in Finmark, with black ears and legs, and black hairs in their tail. Theſe in Lapland are called *Vjelgok*, and are very rarely met with. There are

beſides little white foxes, leſs than thoſe juſt mentioned, called by the Norwegians *Miel Raffer*, but by the Laplanders *Njal*, whoſe ſkins are the worſt of all. Foxes feed on the eggs of ptarmigans and other birds taken by ſtratagem, on mice, ſhell-fiſh found near the ſhore, and ſuch like foods. The Laplander, hunting the fox in winter, follows the track of him, until he finds him either ſleeping in the open field, or has traced him to his den, where he has concealed himſelf. Here the hunter halts a little, waiting the opportunity of killing him with a bullet when coming out of his hiding place. He hides alſo pieces of meat in different places under the ſnow, to the intent that the foxes ſhould come to them. When he has once ſmelt the meat, he eagerly flies to it, but, while ſtriving to diſperſe the ſnow with his feet, in order to get at the meat that is under it, he is ſhot by the Laplander lying in wait for him. This kind of hunting is exerciſed by night, by moonſhine, or, in defect of that, by the glimmering light which they call *Boreal*; for it is ſufficiently known, I think, that that which they call the *Aurora Borealis*, is apparent in ſo great a degree in this quarter of the ſky, that it can ſupply the place of the abſent moon. Foxes are ſometimes killed running, but they are moſt uſually caught in a machine of iron, which, before it is laid, reſembles a ſemicircle, when laid, the ſhape of a complete circle. They fix this rubbed with roſin, fat of the dolphin, or any other unctuous matter, leſt the wily fox ſhould ſmell the ruſt, and lay it in the ſnow, in the ſand near the ſhore, or ſome other commodious place, baited with the fleſh of the lamia, which the Norwegians call *Haae-Kioerring*. The fox ſmelling the bait, inſtantly flies to it, but, while he is endeavouring to remove the ſnow or the ſand with his feet to reach the hidden food, he incautiouſly touches the trap, which touched, inſtantly ſeizes the neck, the feet, or ſome other part of the body, and cloſely holds it. If the ſnare or trap, which frequently happens, ſhould lay hold of one foot only, the fox, ſooner than become a prey to his enemy, eats away his own foot, if there is time for it, and takes to flight with the three remaining ones. This machine is uſed in other places in Norway, and beſides it there is another, called *Ritta*, in which the Laplanders are uſed to catch foxes. The *Ritta* is made in the form of an oblong and low cheſt, and open at one of its ends. Near that end that is open are two ſtakes, overtopping the cheſt itſelf in height, on which is put a beam acroſs. Before the ſaid ſtakes, at the extremity of the cover, (for the machine has a cover no leſs than other neceſſary parts of a cheſt,) is a ſmall pole, to the extremity of which above is a hook with a button affixed, another pole being put over the beam, whoſe fore point juſt touches the button, while a rope is fixed to the other point, paſſing through the aperture made in the cover of the cheſt, and drawn to the bait concealed in the lower part of the machine. The ſnare thus conſtructed, the fox invited and allured by the odour of the bait, creeps in through the open part of the trap, where, while he is digging the earth, he touches the rope which looſens the button, and that being undone, the cover of the cheſt inſtantly falls in, and kills the fox by its weight. And, ſince the ſaid machine can contain only the fore part of the fox, who has got in, while all the hinder part is outſide, it often happens that a wolf falls upon a fox ſo caught, and tears the part in his own way, that the hunter ſhall be deprived of the ſkin, the reward and fruit of all his labour, and which he only looks after, now torn to pieces and broken up. They relate that the Swedes catch bears by a like machine, where it is to be obſerved, that the trap which is conſtructed for the deſtroying of bears, is much larger in proportion to the ſtrength and ſize of this beaſt, compoſed of ſtronger beams and rafters, and laden with heavy ſtones, that the cover in its fall, when the button is undone, may fall with the greater weight and cruſh him. Foxes are killed too by certain poiſoned cakes, which the Laplanders call in their tongue, *Sáëljok*. The fox, when going to build his ſubter-

ranean receſs, digs a way to it, not in a direct line, but in one curved and winding, with a variety of turnings, with the intent, it ſeems, that no one with either ſpear or any other noxious inſtrument ſhould reach it; and as it neceſſarily follows, that this den, and the windings to it, cannot be dug without throwing up a great quantity of earth, you will not without reaſon be ſurprized, that, in ſuch a den, ſometimes of no middling ſize, no heaps of earth dug up are to be ſeen, but that every thing is found plain and level. The Laplander, when going to catch a fox in his den, ſhuts up the entrance through which it appears he paſſes, having made a new one in its place, by the help of which he ſtrives to find out thoſe which lead to the den; which, when he has found out and laid open, he attacks the den itſelf of the fox, where, when he has arrived, he drags him out from it, and kills him. It happens but very ſeldom, that two foxes are found together in the ſame den. Fox-ſkins are ſtretched on a certain machine called *Ratz*, as was mentioned above of wolf-ſkins.

The marten, called by the Laplanders *Nactte*, is found too in Finmark. There are three ſpecies of this animal; the firſt comprehends thoſe which in the Daniſh language are called *Steen-Maar*, that is, marten, found among the rocks. The marten of this ſpecies is darkiſh, ſhort hairs, and browniſh tail, with aſh-coloured ſpots, ſometimes inclining to a black and blue colour, marked under the neck. It takes its name from the mountains and ſtony grounds it moſt uſually haunts. The ſecond ſpecies is the marten, called *Birſe-Maar*, that is, the marten that delights in places planted with the birch-tree; this is of a dark colour, with a purple coloured tail, and marked with white ſpots under the neck. To the third claſs belongs the ſpecies of marten called *Furr-Maar*, uſed to the haunts of fir-trees. This is of a dark mud colour, with a yellow tail, and a mud coloured ſpot under the neck, ſomewhat white. The martens are caught in a trap or iron machine, which I deſcribed above.

The glutton, called *Bielfras*, in Lapland *Gſced'k*, is found in Finmark, but rare and ſeldom. He is ſtrongly furniſhed with teeth, as well as the ſharpeſt nails. Thoſe of Lapland, who have explored the nature of this animal, and thoroughly examined it, aſſert, that the glutton, though ſmall in the body, is certainly not to be compared to the rein-deer, yet that it is able to kill one of full age and growth, but without ſtratagem, as appears from the following ſtatement: In the woods, where the rein-deer uſually ſtray, the wily glutton gets up a tree, from it he leaps down on the head of the rein-deer as he paſſes, and ſo mangles his neck with his greedy bites, that he drops at length lifeleſs under him. The ſkins of the glutton, on account of the white ſhining ſtreak with which this animal is marked along the neck, and which they call in common, a looking-glaſs, are in great eſtimation. From that part of the ſkin which is taken from the feet of this animal, the Laplanders make gloves, elegantly adorned and diverſified with threads of tin interſperſed, as is the cuſtom of the nation. With ſo great, ſo inſatiable a voracity does this animal hunger, that he is ſaid not ſooner to quit the carcaſe than he has conſumed it all. But if he cannot contain the whole of it, he ſearches out two trees very cloſe to each other, between which he ſqueezes himſelf, and by preſſing and conſtraining himſelf violently, relieves his belly; when he has done this, he haſtens again to the carcaſe, and devours the remainder of it. Impelled by the ſame greedineſs, it is uſual with him to go to the cupboards of the Laplanders built on the ways, as ſaid, and gnawing and digging through the coverings, gates, and floors of them, the greedy gueſt, getting in, deſtroys the meats and whatever foods are there to be found.

The beaver, in Lapland *Majeg*, is alſo met with in ſome diſtricts of Finmark, no where more frequently than in Indiager, a diſtrict of Swediſh Lapland, and on the banks of

of a very large and famous lake, which is ſaid to be twelve miles in circuit. The ſame lake, as reported, is of an immenſe and almoſt unfathomable depth, and in it are many leſſer iſlands. They ſay the tooth of this animal is reddiſh, crooked, and almoſt ſquared. His tail, by the aid of which he is ſaid to make a houſe for himſelf, is broad, rough, and full of ſcales. The wool, or rather hairs, are ſold to the Ruſſians in common, and at a good price; they purchaſe alſo the ſkin for the covering their under garment with. The royal governor of this tract of Sweden, the illuſtrious Claudius Gagge, ordered by his Majeſty's command, Chriſtian the IV. of glorious memory, that as many beavers' ſkins as could be got, ſhould be bought for the uſe of his Majeſty. The royal mandate, proclaimed on this buſineſs, is dated the 28th of June 1609. The force and efficacy of the beaver or caſtor oil in various ſymptoms, is wonderful, too well known to practitioners in medicine to be mentioned by me. It is ſaid to be medicinal for the internal diſeaſes of cattle; it is ſaid to be of ſervice in frightening and driving away whales, to whom its very ſmell alone is inſufferable; for which reaſon fiſhermen, apprehenſive of harm from this great fiſh, are ever provided with the oil of caſtor. The beaver for this reaſon is inſtinctively led to build his houſe near the banks of lakes and rivers. They ſaw with their teeth birch-trees, with which the building is conſtructed. Whichever of the beavers ſupplies the place of the ſledge, lies upon his back, with his feet upwards, whilſt his companions put the wood between his feet as he lies down, and holding it with his teeth, he drags it along to the place deſtined for building his habitation, together with the wood laid upon it. In this manner one piece of timber is carried after another, where they chooſe. Thoſe who ſupply the place of the ſledge, are eaſily known from the reſt by the defect of hair, which is rubbed off by conſtant action all along the back. At the lake or river where their houſe is to be built, they lay birch ſtocks or trunks covered with their bark in the bottom itſelf, and, forming a foundation, they complete the reſt of the building with ſo much art and ingenuity as to excite the admiration of the beholders. The houſe itſelf is of a round and arched figure, equalling in its circumference the ordinary hut of a Laplander. In this houſe the floor is for a bed, covered with branches of trees, not in the very bottom, but a little above, near to the edge of the river or lake; ſo that between the foundation and the flooring on which the dwelling is ſupported there is formed as it were a cell, filled with water, in which the ſtocks of the birch-tree are put up, on the bark of this the beaver family who inhabit this manſion feed. If here are more families under one roof, beſides the ſaid flooring another reſembling the former is built a little above, which you may not improperly name a ſecond ſtory in the building. The roof of the dwelling conſiſts of branches very cloſely compacted, and projects out far over the water. You have now, reader, a houſe conſiſting and laid out in a cellar, a flooring, a hypocauſt, a cieling, and a roof, raiſed by a brute animal, altogether deſtitute of reaſon and alſo of the builder's art, with no leſs ingenuity than commodiouſneſs. This too is an extraordinary inſtance of the Divine wiſdom and goodneſs, which, in addition to the other inſtinctive actions of brute animals ſtraying through their haunts, ſhould more excite and actuate us to the admiration, praiſe, and adoration of the Divine Being. In the ſaid cell is an aperture, which ſerves for a door, through which the beavers go in and out. When they are all abroad, the hunters put a kind of a little faſtening on that opening or door, in ſuch a manner, that, on the entrance of the firſt beaver, it ſhould fall and cloſe up the whole aperture as far as it goes. Thus ſhut up, the beaver which is within is hindered from going out, and is taken. But as to what is hitherto related concerning the beaver and his manners I have not attained by my own experience, nor could I learn, becauſe through that whole diſtrict where my duty as a miſſionary lay, this animal never once

came in my way; but what I have heard from Laplanders inhabiting thoſe places reſorted by beavers, I faithfully relate.

Otters are found in great quantities through Finmark: this animal is called by ſome Norwegians *Slenter;* by Laplanders *Zhjevres*, a word denoting each ſex of this creature. But the male otter, of full age and ſtature, is called *Goaaige;* the male young of the otter in his firſt year, *Farro Goaaige;* the female of full age and ſtature, *Snaka;* a female young juſt come out of its firſt year, *Farro Snaka;* and thoſe that have not attained this tender age, the Laplanders call *Varlagges*. The otters getting their ſubſiſtence in the lakes ſurpaſs thoſe that live in the ſalt water by far, in the ſleekneſs and beauty of their hair. The otters can be as eaſily made tame as dogs, cats, and other domeſtic animals; beſides, it can make itſelf agreeable and uſeful to its maſter, fetching fiſh from the ſea, and having diſcharged that duty returns home. There is a kind of otter, an animal of ſmall body, yet can catch the cod and other larger fiſh: when it catches one, it drags it out to the next ſhore and eats it: while eating its eyes are always ſhut, at leaſt very ſeldom does it open them, which the hunter chiefly attends to; for he comes nearer while the otter's eyes are ſhut, and halts when open, which he does by turns, until he can conveniently reach him with a ball, and thus commodiouſly kill him. On every maritime excurſion the Laplander is furniſhed with his gun. If the time permits he determines his courſe, not directly where he is going, but approaching the ſhore he examines all its bays and creeks, to find out wild animals of all ſorts, but chiefly otters, which frequently are found there. This is the nature of the otter kind: that from its amphibious nature it employs one part, reſembling a fiſh, ſwimming through the ſea, through lakes and rivers, in getting its food; the others aſſigned to reſt, which it takes on the dry ground, and in caverns, not ſuch as foxes build for themſelves, but chooſe ſuch as by their very nature are formed from heaps of large ſtones, diſpoſed in a certain order. The Norwegians call a heap of ſtones of this kind *Uur*. When the cavern is found the hunter lays his ſnare, from beams and poles artificially joined and laid together, and furniſhed with very ſharp points, in which the otter, either ſeeking or quitting his den, falls into the ſnare. Otters are taken in that well known machine ſpoken of before. The ſkins are ſtretched on two poles fit for this purpoſe: that which is applied to the longer part of the ſkin is called in Lapland *Gidne;* the other, which is applied to the ſhorter, is called *Buoggnamor*. The Ruſſians ſometimes wear cloaths trimmed with otters' ſkins; beſides, they export them into Tartary, to be ſold, repurchaſed dear enough by the Laplanders; for a ſkin which ſtands a Daniſh trader in but one thaler, is bought back from the Ruſſian at not leſs than two or three thalers.

The ſeas around Finmark abound in great plenty of ſeals, of which ſome are larger, and marked with white ſpots; of theſe, ſuch as are male are called in Lapland *Dævok;* the females are called *Aine*. Some are of huge bulk, of white colour, which the Laplanders call *Jaegees;* others, of moderate ſize, marked with black ſpots, called by the Norwegians *Steen Robbe*, by the Laplanders *Nuorroſh*, the Lapland word expreſſing each ſex. But the male is called in Lapland *Rokka*, the female *Afzhio*. Others are white, with large black ſpots, which the Laplanders call *Daelja;* others alſo white, with black ſmall ſpots, called *Oaaido;* others ſmall, with a long bent beak, in Lapland called *Fatne Viudne;* others, with other colours and other names. Beſides the ſaid ſpecies of ſeals, the *Morſe* is ſometimes found in ſome parts of the ſeas around Finmark. This marine beaſt the Norwegians call *Hual Ros*, the Laplanders *Morſh*. The morſe has broad noſtrils, thick tongue, huge crooked teeth, eſpecially two, which project far beyond the reſt, and with which it is ſaid to lay hold of rocks under water in the ſea, at no great diſtance from the ſhore, and to keep himſelf faſt by them. The Ruſſians uſually make balls

balls and other artificial things from the teeth of this fiſh, as equalling ivory in whiteneſs, as almoſt to ſurpaſs it, though dearer and more valuable by far. The feet of the morſe are covered with a very thick hide, almoſt five fingers in thickneſs. King Chriſtian IV., of glorious memory, by a decree publiſhed at the caſtle of Bergen on the ſixth of July, 1622, ordered that fifteen hides of ſeals ſhould be yearly bought for him. But the ſea-horſes that are found in this part of the ocean are ſhort-haired, yet with a maned neck, of an aſh colour, different from thoſe found in Iceland, of a carnation colour. The morſe when attacked makes a furious reſiſtance. The Laplanders generally kill them by muſkets that are grooved; ſometimes they attack them by clubs or battoons, the blow being inflicted on the muzzle or front of the animal; and winter is the time when this mode of hunting is practiſed, when the ſeals get together for the purpoſe of coupling. The young (which are firſt born are almoſt white, yet gradually take the colour of the dam), as weaker, nor able to fly, are in ſuch a conteſt in the greateſt danger. The ſame fate generally befalls the dams, yet reſiſting, and with all their might attacking their aſſailant; whence it oftentimes happens that they fall not unrevenged. In a calm ſea one may ſee the ſeals ſleeping, the head with the lower part of the body being under water, with the back above. The Laplander obſerving this, on the diſcharge of his gun, rouſes him from his ſleep, but ſo as to overwhelm him with a perpetual ſleep, or in plain terms, hits him when ſleeping with a ball and kills him. The ſeal is among the amphibious, ſwimming ſometimes in the ſea, ſometimes on dry land, reſting among the rocks, where, whilſt he negligently lies, puts out one of his fore feet, exhibiting to thoſe who come to ſee him the appearance of a man ſtretched on his back, calling ſomebody with his hand to his aſſiſtance. When many of them are ſwimming at the ſame time in a troop, in order to get poſſeſſion of the ſame rock, the one ſtriving to get before the other, by which means toſſing and rolling themſelves they laſh the ſea with ſuch violence, that their ſhouts while contending, and the noiſe of the waters can be heard far off. Thoſe who happen to gain the rock have no ſlight conteſt with their aſſociates, who yet ſwimming in the ſea, endeavour by every exertion to get to the ſame rock. If the conteſt is with an inferior, he who holds the rock eaſily defends the place; but if with a ſuperior, he at length is compelled to yield. In ſuch a conflict they mutually miſerably mangle each other, ſetting up at the time a rude and ſavage kind of noiſe. Seals are uſually caught by the following artifice: the ſea, by means of the tide, increaſed to its greateſt height, the ſeals climb the rocks, as was ſaid, to remain on them until the ſea ſhall ebb: mean time a ſtrong piece of wood, planted and furniſhed with very ſtrong hooks and bent irons, is put at the bottom of the rock, to the intent that the ſeals ruſhing down from the rock into the ſea, ſhould get entangled in theſe hooks, which to ſucceed the better, a ſudden ſhout is raiſed by their aggreſſors; on hearing which the ſeals with all their might ruſh into the ſea, and by that exceſſive haſte, greater than at any other time, are caught on the hooks ſet for them. The ſkins of this animal are ſtretched uſually in the manner in which ſalmon are dried, except the tenter-hooks are more in number, longer, and thicker.

The ſquirrel, in Norwegian, *Iforn*, in Lapland, *Orre*, is found in ſome parts of Finmark. Among the ſquirrels ſome are of a grey colour; but in ſummer all, without diſtinction, are red. In the woods, where they live, they ſpring from the top of one tree to another with amazing agility. When paſſing lakes or rivers, they ſeat themſelves on little pieces of wood or bark, and erecting their tails for ſails, they reach the place they intend very commodiouſly. There were two kinds of bows in uſe among the Laplanders; the one, called *Gietdaugie*, or the hand-bow, becauſe it was ſtretched by the hand alone. This inſtrument was very ſimple, conſiſting of one arch, properly ſo called, and a ſtring.

a ſtring. The arrow, which was fitted to the hand-bow, was rather long, with a very ſharp point, made of bone or iron. The other, was called *Juolge-daugie*, or foot-bow. This, beſides the bow and ſtring, was furniſhed with a wooden handle and button, made from the horn of the rein-deer, on which the ſtring held when the bow was bent. The arrows placed in this bow were without point; but the *Giet-daugie* was ſtretched no leſs by the aid of the feet than the hands, whence it had its name. After the invention of muſkets, the uſe of bows was rarer, though the *Giet-daugie*, or that bow which is called from the feet, has not grown altogether into diſuſe among the Indagrians in Sweden; for as there is in that tract of country a great number of ſquirrels, the hunters are ſaid to make uſe of bows inſtead of muſkets, leſt the ſkin of this beaſt ſhould be injured by bullets. Forty ſkins (which number, when ſpeaking of ſquirrel ſkins, is called *Tommer*) are ſold by the Laplanders at the price of one thaler.

There is a vaſt number of weaſels alſo in Finmark. This little animal in Lapland is called *Boaaid*, which word expreſſes each ſex; but the male is called *Goaaige*, the female *Gadfe*. Weaſels during the winter are grey, unleſs that on the extremity of the tails they have very black hairs, with the exception of a few of them, whoſe tails as well the reſt of the body is all white; theſe are called by the Laplanders *Seibuſh*. On their haunches is found a kernel, or ſmall piece of fleſh, when the ſkin is removed, of a very bad and almoſt inſufferable ſmell, which they call themſelves *Zhjiävra-Kuatte*. The weaſel is moſt greedy and moſt eager after eggs. If you faſten a clue of thread to a fiſh, or any thing elſe of which the weaſel is fond, he will, after dragging the food to his hole, immediately bring back the clue of thread. I relate what I have heard, but from thoſe who have teſtified that they had often ſeen the matter themſelves. The Alpine weaſel is called by Pliny the winter mouſe; more truly and fitly named *Royſe Kat*, that is, living among heaps of ſtones, as it is commonly called by the Norwegians, becauſe it hunts mice no leſs actively than the tame domeſtic cat. Weaſels are caught in a certain trap, which the Laplanders call *Gillar*: it is made from a piece of wood of the birch-tree, cleft two parts, of which the one, which is propped on a ſtake, falls down on the weaſel creeping to the bait through the aperture, which is open in the trap for this purpoſe, and cruſhes him to death by its weight. The whole machine is raiſed by a prop from the ground, leſt field mice ſhould get in and deſtroy the bait. Before the trap is a ſtump equalling the elevation, which the weaſel, on ſmelling the bait, aſcends, that he ſhould creep into the trap more commodiouſly. When caught in the trap he makes water through fear, which ſhould it touch the ſkin, ſuperinduces a yellowiſh colour, after ſpoiling the former whiteneſs of it.

Certain mice, called by the Norwegians *Lemaenner*, by the Laplanders *Godde-Saepan*, infeſt Finmark alſo. Theſe mice uſually lie under ſtones, and in ſmall cavities, and there have their neſts and their young: the young in the beginning are blind, and variegated. Mice of this ſort in reality drop from the ſky, which I relate on my own authority. Daring by nature, at leaſt they are little afraid; for ſhould any one attack them with a ſtick, they inſtantly turn about in a hoſtile manner and gnaw it. Whenever they drop from the ſky, the Laplanders then augur to themſelves as a remarkable year for the taking of foxes, the following one; for as they are very fond of theſe creatures, they find them in a great abundance on the mountains in the year there is ſuch a plentiful ſhower of them; but on the next, when there is as great a dearth, they betake themſelves to the ſhores, with the hope of finding there what they ſought in vain for on the mountains. The Laplanders, making the beſt uſe of the opportunity, ſtrive to catch, by all arts and means in their power, their viſitors. But theſe mice are no leſs expoſed to the attacks of foxes, than they are liable to be devoured by the crows and rooks.

In ſome parts of Finmark they proceed in troops, an almoſt innumerable crowd; nor do they, ſhould they, on their march, arrive at a lake or river, turn out of the way, or the courſe they began, but committing themſelves boldly to the water, paſs directly over the obſtructing lake or river; which I find too, not by experience, for I have not ſeen it, but from report, is the cuſtom alſo of dormice.

The knowledge, ſuch as it is of the wild animals of Finmark, and the methods of taking them, being laid down agreeably to the plan of the work, I ſhall beg leave to mention with the reader's permiſſion, that in theſe countries it does not ſeldom happen, that the ewes produce twins twice a year, and the goats not only twins, but ſometimes yean three kids at once. The he-goats uſually rut, elſewhere, about the time of St. Bartholomew, as it is called in the kalendar; here later; about the feſtival of St. Michael, they are known to couple. Finmark produces likewiſe moſt other wild birds, which are found elſewhere throughout Norway. Of theſe, ſome are ſtationary, and ſome are conſtant, as the eagle, the falcon, the hawk, the owl, the crow and raven, the ptarmigan, the cormorant, a peculiar kind of bird, in Norwegian called *Aderfuglen*, the ſea crow, and many others, which are conſtant here as elſewhere. Others foreign and migrating, which come in the beginning of ſpring, to depart again in autumn, which ſeaſons of the year they as well know, and as accurately obſerve, that men by the aid of ſtars and kalenders ſcarce know them better. Among the emigrating are claſſed the wild gooſe, in Norwegian *Graagaaſen*; the pigeon, a bird in Norwegian called *Bruus Koppen*, i. e. creſted or tufted, the fig pecker, the field ouzel. This cuſtom of coming and then migrating at a ſtated ſeaſon, is obſerved not only in Finmark, but in other places through Norway, in the ſaid birds.

Finmark abounds in plenty of birds, as well aquatic as terreſtrial. White falcons are ſeldom found. They exceed ſomewhat the vulgar grey coloured in the bulk of the body: under the belly and wings they are white, on the back grey, with yellow feet and beak. In high and inacceſſible rocks, and in clifts of quarries, they build and hatch their young. Of the common kind of falcons of a grey colour, there is by far the greateſt number in theſe parts, who of a diſpoſition neither perverſe nor intractable, were found with thoſe foreigners who purchaſed formerly on certain conditions, the licence of catching them, from their ſerene ſovereigns the Kings of Denmark and Norway.

In the wild haunts of Finmark it has been ſaid, that white owls are found. This bird, they ſay, is a little larger than common owls, the feathers are white marked with black ſpots, the hinder part of the head ſhort, the beak broad, briſk eyes, and hairy feet. It is ſaid to build its neſts on high rocks, and there to hatch its young.

A certain bird in Lapland called *Skaite*, very much like that ſea bird which is called *Rive*, to be ſoon deſcribed below, is to be met with on the mountains, ſeeking its ſubſiſtence by the carrying away the eggs which other birds have by chance left in its way.

Here too is found the greateſt number of rooks, through all Norway, yet no where more numerous to be ſeen than about the ſhore, flying and perching in troops. The colds of winter, that chiefly pinch this part of the world, ſo ſubdues them, that they not only gather thick about the houſes, but even boldly fly into the porches and courtyards. Whenever any ſervant going to clean veſſels from the kitchen, ſhall caſt any ſcourings into the ſnow, they inſtantly fly famiſhed to devour the ſcraps, if any can be found among the cleanſings that are thrown out. The linen cloaths which in ſummer are uſually waſhed and cleanſed in the ſun, unleſs carefully guarded, they tear with their beaks under the compulſion of hunger; nor would they ſpare the ſtalks in autumn provided

provided the keepers would let them devour them; ſuch, indeed, voracity and malignity is obſervable in this kind of bird, as is no where elſe obſerved throughout Norway.

A great number of crows is found in this tract alſo. Birds of this kind, which by their nature deſerve to be called rapacious and plundering creatures, carry off the very fiſh, which according to the cuſtom of this people, is ſuſpended to dry in fiſh houſes, and alſo the ptarmigans taken in nets.

The magpye called in Lapland *Ruoſh-Karanas*, in Norwegian according to the different dialects of the places *Stiuur*, *Stiuul*, *Stivor*, and *Stieer*, is ſeen ſometimes in Finmark, yet very ſeldom beyond the pariſhes of Alten, and Hammerfeſt in the weſtern Finmark. If it happens, as in Wardoea, an iſland ſituated in the eaſtern Finmark, this garrulous bird ſhould be ſeen near the place of worſhip, is taken as an omen, either portending death to the paſtor of the congregation, or certainly ſome change; but if it ſhould appear on the caſtle it was thought to preſage inſtant death; or the hopes of a new appointment to the royal governor reſident there.

In Finmark, as in moſt other tracts of Norway, a certain wild bird, the male of which is named in Norwegian *Tiuur* or *Tedder*; in Lapland *Zhiufzia*, in Latin the *Urogallus major*. It is about the ſize of the eagle, a hoarſe and ſcreaking voice, of a pale aſh colour, with black and white feathers on the breaſt and under the belly. It uſually ſwells and ſtruts, with its feathers proudly expanded, like a peacock. The female of this bird, in Norwegian *Roy*, in Lapland called *Goaappel*, is leſs than the male, of a dark colour interſperſed with ſpots. The fleſh of theſe birds very much reſembles the fleſh of birds in common, as well in colour as in taſte.

A certain bird of extraordinary ſize, neck and feet of an ell long, called by the Laplanders *Guorga*, is met with in Finmark, very ſeldom it is ſeen.

Finmark abounds in a great number of ptarmigans. Birds of this kind are grey in ſummer, mixed with a pale yellow, white in the winter, when they ſometimes ſo bury and cover themſelves with the ſnows, that they cannot be ſeen, by the paſſengers in the place, where for a time they were hid under the ſnow, which after their departure is yet ſufficiently viſible. But there are two kinds of the ptarmigan, one of which comprehends thoſe which in Lapland are called *Rieuſak*, in Norwegian *Stov Ryper* or *Lie Ryper*, becauſe they frequent the woods and hills; to the other claſs belong thoſe called in Lapland *Giron*, in Norwegian *Field Ryper* or *Stare Ryper*, that is mountain ptarmigan, becauſe they are found on the ſummits of the loftieſt mountains. Theſe differ a little from the former in the ſize of the body, which is a little leſs, and alſo in the voice. The Laplanders catch the ptarmigan in the following manner; they cut down birch trees, and diſpoſe them when cut in the ſhape of an incloſure through the plain, different doors opening on this ſide and that, by which birds of a moderate ſize can creep in commodiouſly. At each opening is a loop, in the form of the fingers extended, fixed at each end in the ground. The ptarmigan alighting accidentally on the ſaid incloſure, whilſt fleeting freely up and down, they come to the tops of the brich trees, of which this hedge is made, for catching them, to the openings where the loops are put, through which, when wiſhing to get to the nearer ſide of the incloſure, they are entrapped.

The wood-pigeon is ſometimes ſeen in the eaſtern Finmark; in the Ruſſian territories, if report is true, much more frequently.

There is a certain bird, which from the creſt it carries, is called in the Norwegian *Bruus Kopper*, to be met with in ſome of the tracts of this region. Such of theſe kind of birds, as are to be found in theſe countries, are either grey, with white neck, or dark

with a red one, or variegated with a dark neck; they equal in ſize the field ouzel or black bird, but with larger feet, they have a ſharp beak of a pale yellow colour. That which is male is red from the beak on to the crown without feathers; it is adorned with two creſts or combs, which form as many flaps, riſing on each ſide of the fleſh without feathers. The male when going to couple for young ſeats herſelf on ſome riſing hillock by land, and gaily expanding all his plumes, wonderfully diſplays them, and exhibits ſuch geſtures as we before obſerved in the bird called in Latin *Urogallus*.

The ouzel or field black-bird from its elegant colour, and delicious flavour, is much in eſteem, known to the neighbourhood of Denmark, and is to be met with in Finmark. Theſe birds come in ſpring and go in ſummer. When the time of their flight is approaching, they fly together and coaleſce in a variety of greater flocks. They inhabit marſhy grounds, where on the higher hillocks, which are found in the marſh, they build their neſts, and lay their variegated eggs under the open air, whence, in ſome parts of Norway, they are called *Heiſoner*, as if *Hedeſoner*, that is, birds inhabiting marſhy grounds. This ſame bird elſewhere in Norway is called *Agerloe*, that is huſbandman, but in Lapland *Bizhiutzh*.

To the claſs of ouzels or field black-bird, is referred a bird called in Norway *Spove*; in Lapland *Guſgaſtak*. There are two kinds of this bird which is not uncommon any more in Finmark than elſewhere through Norway, differing from each other, but in the ſize of the body alone, ſome ſurpaſſing others in magnitude; but all almoſt agree in their aſh colour, inclining ſomewhat to a dark one, in their feet rather long, long beak, crooked and ſlender. They are frequently ſeen on large ſtones by the ſea ſhore. They lay their eggs in marſhy grounds, and the fleſh is of a moſt delicious flavour.

In Finmark as elſewhere through Norway, a certain bird is to be met with, called in Lapland *Maekkaſtak*, but in Norwegian, from the varying dialect of each province, one time is called *Ryſſe Giog*, another time *Maeffer Giog*, and alſo *Myre-heſt*. It has dark wings, variegated with ſpots, a beak rather long, a voice not unlike the bleating of a he-goat; it yields a little in the ſize of the body to the field black-bird, and lives in marſhy grounds. As far as I know this bird is found in Denmark, there known under the name of *Myrebut*.

There is a certain bird to be met with in Finmark, called in Lapland *Sagan*, in Norwegian *Kield*, or *Rone Kalv*, in Latin *Pica Marina*, and frequently met with, in Finmark. The Pica Marina or Sea Magpye, is a little larger than the black-bird of the fields, of a ſaffron beak, the belly and feet ſomewhat yellow, the breaſt and part of the wings white, the reſt of a very black colour. It is ſeen in common on the ſhore, where it lays its eggs, and brings forth its young in a neſt which is negligently made among the ſea-weeds or bare ſea ſtones. It is no ungrateful object to the curious eye, to obſerve this bird on the ſea-ſhore, cloſely treading on the water receding along the ſand, and yielding to it on its return: but its ill-timed and extremely unpleaſant vociferation which frightens away the other birds is not ſo agreeable to the hunters.

That ſpecies too is reckoned among the aquatic birds of Finmark, which the Laplanders, in their language, call *Buvadak*, but in Norwegian, the inhabitants of the diſtrict of Finmark call *Strog-Kjeld*, that is the chattering magpye. This does not differ from that I have deſcribed, but in the ſtature which is a little leſs, and colour which all over the body is grey. But this bird is known and hated for its clamour and noiſe, with which it fills the whole neighbourhood, and from this it has its name. In other parts of Norway, it is called *Strand Kield*, from the ſhore where it lives.

There is met with alſo in this tract, a certain bird called in Lapland *Gaddevierruſh*, in Norwegian, *Fjoereptit*. This bird, which elſewhere is little known through Norway, exceeds in ſize the tame ſparrow, it has grey feathers on the back, varied by ſpecks of a different colour, white under the belly, breaſt, and wings, a ſharpened beak, a piping voice, and feet rather long. It inhabits that part of the ſhore, next to the ſea, where it flies from one ſtone covered with weed to another. It is ſeldom ſeen alone, but often accompanied with ten or more companions. The fleſh of this bird is very delicate and ſavory.

A certain bird is alſo found, by the Norwegian inhabitants of this place called *Sandmuling*. This bird, whoſe voice is alſo piping, is ſeen ſometimes on the ſhore, ſometimes on land, a little removed from the ſhore, and wherever it goes, it makes uſe not of its wings but its feet.

There are found beſides in Finmark certain birds called by the Norwegians of the country, *Sneefugle*, that is, ſnow-birds, elſewhere through Norway according, to the variety of that dialect, *Fieldſtaer* one time, at another *Sneefugle*, but in the Lapland language called *Alpe*. Their colour almoſt white, dark wings, ſhort beak, their fleſh of an exquiſite flavour. What is obſervable in this bird and truly ſingular and unuſual is, that they fatten at the coming in of the tide, and grow lean again on its receſs. They are taken in the following manner by the Laplanders: ſome little ſticks are ſet up on the ſnow, to which nooſes, made from the tails of cows, after the manner of loops by which thruſhes are taken, are ſuſpended. The birds, meaning to get through, are caught in the loops in their way. The ſaid birds are viſible in certain tracts of Norway, in the beginning of ſpring, forming themſelves into a large troop, but at the end of three weeks, eſpecially in the iſlands, again diſappear to return, as uſual, in the next ſpring.

The goldfinch of Finmark, is of a very elegant colour, and of a moſt muſical note.

The grey linnet is, under the neck, of a pigeon colour, and furniſhes no ſmall degree of delight to thoſe who walk through the groves for relaxation, from its very ſweet harmony.

Among the ſinging birds which the groves of Finmark poſſeſs, is ſometimes obſerved a certain bird, of very ſweet ſong, ſhort beak, black head, ornamented with a variety of ſpots, green belly, and a tail embelliſhed with red and yellow feathers. It uſually lays its eggs in ſubterraneous places.

Beſides the enumerated birds, more kinds of ſinging birds are found in Finmark, among which is a ſmall bird of a grey colour, in Lapland called *Veige-Zizatzh*; others alſo, of a black colour, diſtinguiſhed by a white collar round the neck, called in Lapland, *Gjelavaelgo*; another kind alſo called *Laſhol*, equalling in ſize the field black-bird or ouzel, not unlike the colour of the lark, all of which delight the paſſengers by their delightful melody.

A certain bird, in Norwegian called *Laxe-Titing*, is ſometimes ſeen near the banks of rivers. In this tract as elſewhere through Norway, a little bird is found near the cataracts of rivers, of a black colour, with a white collar round its neck, called in Norwegian *Elvekald*, in the Lapland language, *Kuoikgarheek*.

Among the ſea birds of this country the ſwan too ſhews itſelf in certain places. The Laplanders take ſwans by a certain trap.

Geeſe, which they call wild, or grey, it appears, fly from the warmer countries in the beginning of ſpring every year to Norway, and dwelling there in the little iſlands in the ſea, through the whole of ſummer hatch their young, but on the turn of the year, when inclining to autumn, and their young are grown up, they return to the

place they came from. I grant that ſome of the ſaid birds in this journey do not proceed further than Norland, others ſcarcely beyond the iſlands of the dioceſe of Bergen, towards the north; yet equally true and certain is it, that a great number of them do not ceaſe until they have penetrated into Finmark in their flight, where they hatch their young in the iſlands well known to them, namely, *Serden*, *Ingden*, and *Rolfsden*, in Weſtern Finmark, and *Hen-den* in the eaſtern, and procure ſubſiſtence for themſelves and young as they can, until on the return of autumn, they regain, with their young now grown up, the warmer regions of the ſouth. It is pleaſant to obſerve in this kind of bird, that coming from winter quarters into Norway, at a ſtated ſeaſon of the year, they diſcharge by turns the duties of a captain or leader; for they fly in flocks, the one following the other in order, when, he who was for ſome time leader or ſtandard bearer, paſſing his office over to him who is next in order, retires into the rear and cloſes the troop. It is ſtill further to be noticed, that on this journey they have certain ſtations, eſpecially in the narrow angles of the narrow bays, where they put up together at night, and where they remain for many days; and what chiefly raiſes admiration, is that this bird, which in other reſpects is accounted an animal ſo ſtupid, that the greateſt fools, deſtitute of almoſt all power of judging, are called by way of reproach ſtupid geeſe, yet ſhould find his way ſo accurately through ſuch an immenſe tracts of country, not only to the ſame region, but even to the ſame iſland, where, after the lapſe of a year, he had dwelt, and ſhould recognize and claim the neſt he had built there. The pilot, who has learned his art by the continued induſtry of many years, and eſtabliſhed it by long practice, ſcarcely directs his courſe better to the deſtined ſhores, provided with his nautical compaſs, his hydrographic charts, and other inſtruments and aids, than do theſe birds complete their courſe, aided by inſtinct alone, to countries hindered by an immenſe diſtance, from the cold climates they come out of. One of their number keeps watch, while the reſt are aſleep, which puts the hunter, if he means to kill one of them, on his art and all his circumſpection; yet ſome of them muſt fall under the rifle barrel guns of the Laplanders. They are caught alſo with traps covered with turf, inſtead of a bait. A part alſo is killed, when they are weak and infirm on account of their feathers which fall annually off; at this time they withdraw from the traces and intercourſe of men, to places more remote, and therefore more ſecure.

In eaſtern Finmark it is ſaid that a certain kind of wild gooſe, is found different from the reſt of his kind, both in the bulk of the body, which is leſs in theſe, and in colour. For they are dark on the back, with a white belly, with black ſpots interſperſed between, with a white circle round the eyes, with yellow feet and beak. The fleſh of this gooſe is not of an ungrateful reliſh, nor do the eggs differ much in goodneſs from thoſe which tame geeſe lay.

Ducks are very good in colour and flavour in Finmark; there is ſeen there a bird of the ſize of the ſmall duck of a black colour, inhabiting the ſalt water, as well as the lakes. The Laplanders call it *Skoaarra*.

Of the birds which in the Norwegian language are called *Aderfugle*, an immenſe number is found through Finmark. So immenſe that flocks, even of a thouſand of theſe kinds of birds together, may be ſeen in ſome places, chiefly in the bay of Porſanger. That of the male and which is called in Lapland *Likka*, has a broad beak, of a green colour; the feathers of the head, breaſt, and wings, are elegantly diverſified with white, black, ſky blue, green, and brown. The female is of a dark colour, with a few ſpecks of a different colour. The feathers are of ineſtimable value, and ſerve for the ſtuffing of pillows, inſtead of wool; this feather being in its nature moſt excellent and

ſoft, is eſteemed no leſs by foreigners than natives; it is alſo known, and very much in vogue, in the courts of princes. This bird lays eggs the ſize of ſmall gooſe eggs, of a grey colour, turning to a bluiſh, the yolks of which, though reddiſh, are not ill-flavoured. It builds its neſt in common among the twigs, ſometimes among the ſea-weeds that are dry on the ſhore. So carefully and faithfully does it ſit upon its eggs, that at the approach of man it will ſcarcely deſert them; and though it ſurpaſſes the crow in ſize, yet it is not a match for the crow, when plundering the neſt and eggs. The fleſh of theſe birds is of a very unſavory taſte.

On the ſhores of Finmark, as on the reſt of the Norwegian coaſt, extending into the ſea, is found a bird, which is called in Norwegian *Imber*, black feathers, with ſome white, a long and ſharp beak, feet turned in, a diſmal and terrific voice, by which the vulgar believes that a violent ſtorm of the ſouth wind immediately coming on is portended: it is of a very large ſize, as weighing eleven pounds, but not of equal goodneſs and flavour. One may always ſee this bird, never flying, but ſwimming on the water, and indeed ſo deeply ſunk, that no part, except the head and neck, appears above it: and as the wings do not correſpond to the ſize of the body, it raiſes itſelf with difficulty; whence, at the voice and appearance of man, it ſecures itſelf, not by flying, but by diving. You may meet one frequently; ſeldom or ever ſee two together. Such is its voracity, that it can devour at once a whole fiſh of no moderate ſize.

A bird, known through all Norway as far as it extends, called in Norwegian language *Loom*, in Lapland *Gakkor*, or *Gakatte*, is found alſo in Finmark. It is a little larger than a duck, leſs than a gooſe; it has a long and ſharp beak, a ſtrange but ſtrong voice; the neck, as well as the reſt of the body, is long and graceful; it has not much power in running, but is very ſtrong on the wing: it brings forth its eggs in the little iſlands and rocks, ſituated in lakes and on mountains.

The bird which is called in the Norwegian, *Starv*, is called in Latin *Corvus Marinus*, ſea-crow, here, as elſewhere, is ſeen about the Norwegian coaſt. It reſembles the pigeon, which it ſurpaſſes, in ſize, by a long and ſharp beak. The colour of this kind of birds is moſtly the ſame, being black all over the body, with ſome white ſpots under the belly, the reſt being all black. The nature of ſea-crows is this, that they ſwim by turns in the ſea, and take up their reſt on the rocks in great numbers, with their wings expanded, that they may be the ſooner dried in the ſun. When going to fly from the rock where they were, they all precipitate themſelves into the ſea, with a great noiſe of the water, to the purpoſe that when their wings are made wet, they may become fitter for flying. They are incredibly voracious, for they eaſily ſwallow down whole fiſhes, and thoſe of no moderate ſize, by which the fleſh of this bird always taſtes of the fiſh, that is its conſtant food, and on that account leſs delicate; for which reaſon, if it is boiled with peas, remitting a great deal of that bad taſte, it is tolerable food. Theſe birds lay their eggs and hatch their young among heaps of ſtones.

In the ſea about Finmark is a bird, called in Norwegian *Hav-heſt*, that is, the ſea-horſe. It is diſcerned at a diſtance from the ſhore, uſually in the open ſea; nor does it come to ſhore but in a cloudy ſky, ariſing in conjunction with a horrid tempeſt. It is ſuppoſed to lay its eggs on the coaſt of Iceland; in colour and ſize it reſembles a cormorant, except that the colour inclines a little to white, with certain dark feathers interſperſed here and there. The beak is divided into certain departments, each department diſtinguiſhed by a different colour. The voice is ſhrill, and is brought out with a certain ſnorting. It ſmells of the oil got from the fat of fiſh. It has its wings diſtended and ſtiff when flying. It ſleeps in the waters, and is ſeen ſometimes moving through them with an ambling pace, a ſign that a ſtorm is ſhortly coming on; on the

other hand, if the ſea is tranquil, it is thought to be ſign of a calm and ſtillneſs of the air. Beyond the bay of Dronthelm, towards the ſouth, this bird is not ſeen.

In this part of the northern ocean a certain bird, likewiſe, is ſeen, called in Norwegian *Hav-Orre*, the marine heath-cock. That which is male equals in ſize the bird *Aeder*, juſt deſcribed; on the head it is a greyiſh colour, green about the eyes, bluiſh on the beak, diſtinguiſhed by red, yellow, and black; on the neck white; the feet yellow, but black almoſt in the parts; but the female is uſually of a browniſh colour.

A certain kind of bird, of the ſize of a duck, of a dark colour, is found alſo in Finmark. They are to be met with in flocks, and are not much afraid of the preſence of men who approach them. The Ruſſians are ſaid to bring up at home birds of this kind tame.

The birds the Norwegians call *Hav-Aelder*, are found no leſs in this tract of country than elſewhere, near the Norwegian ſhore. The male of theſe is uſually of a red neck, mingled with white, rather long feathers, of a white colour, coming out from the tail. Many of them are ſeen together, with a conſtant vociferation, rivalling an articulate voice, redoubling the ſound of *Kiopangla*; hence they are called by the Laplanders *Anggalagges*, and by the inhabitants of the ſouth of Norway, by way of joke, *Angle Magere*, that is, hook-ſmiths, from the vernacular force of the word ſignifying ſome ſuch thing. They are ſaid to aſſemble near lakes, on the mountains, for the purpoſe of bringing forth their young, and to hatch their young. The fleſh of this ſort of bird is neither very ſavoury, nor altogether without reliſh.

The birds which in Norwegian are called *Allfer*, here too are to be ſeen up and down on the Norwegian coaſt; as alſo the *Klub Allfer*, which bring forth their young in the clefts of rocks.

This region abounds with great numbers of birds, which the Norwegians call *Lunder*, and which too are to be met with through Norway. This bird is ſomewhat leſs than a duck, has a hooked beak, not much varying from an eagle's, except where it is marked with various ſpecks, different from an eagle's, which is all of one colour. Theſe birds lay their eggs in high and inacceſſible rocks, whence they are taken out with long poles. In certain tracts of Norland dogs are reared and inſtructed to get into the rocks and bring out the birds themſelves. The feathers and down of theſe birds, above all which Norway produces, are moſt excellent, and uſeful in the ſtuffing of beds and pillows.

In ſome tracts of this country, ſuch as the iſland *Aeffer Den Sylteviigen*, and *Sverholts Klub*, in the eaſtern Finmark, in the weſtern, and elſewhere, is a bird, known here and there in different places through Norway, in the common language called *Tieſte*, but in the Lapland *Zhiaclkes*, a little below the ſize of a duck, of a chicken voice, black eyes, with a white ſpeck on each wing, the feet being elegantly red. Its eggs are ſtreaked, contain a very full yolk, and red in compariſon of that which is found in the eggs of hens; it lays among heaps of ſtones, or in the clefts of rocks; its neſt is negligently prepared on the bare ground, but yet ſufficiently adapted for the hatching and nouriſhing its young. The young in the firſt year are grey, when, in Lapland, they are called *Borgek*. This bird, ſwimming on the water, on the diſcharge of the gun, plunges itſelf in the ſea, ſwifter than thought, the inſtant. Finmark produces cormorants in numbers almoſt incalculable. Of this kind of bird are various kinds, among which are numbered cormorants of a grey colour, called in Norwegian *Sild Maager*, that is, cormorants that feed on herrings, the largeſt of their kind: the greater cormorants, with black wings, yellow feet and beak, in Norwegian called *Sortbag*, in Lapland *Gairo*; and the leſſer cormorant, of the ſame colour, in the Lapland called *Sobmer*; a larger kind, white, with grey eyes, yellow beak and feet, in Norwegian *Blaa Maager*, in Lapland called

called *Dalvek*. But theſe leſſer cormorants chiefly are to be met with in great numbers, of the ſame colour with thoſe juſt mentioned, which are named in Norwegian *Saeing*, in the Lapland *Gaiſke*, and which ſurpaſs all the other ſpecies in number, are thoſe leſſer cormorants which, with the exception of black feet, are like the former in colour, called in Norwegian *Kroffe*, in Lapland *Skjerro*. Of theſe whole troops are to be ſeen in places where they aſſemble for laying their eggs, and hatching their young. They lay their eggs on high rocks, whence they fly in troops at the approach of man, darkening the whole air as with a thick cloud, and fill all places with their unſeaſonable clamours. Near the promontory of *Sverholt*, in eaſtern Finmark, is ſeen a high and lofty rock, called in common *Sverholts Klub*, on the ſide of which next to the ſea, the Omnipotent Architect of nature has formed in the rock itſelf certain natural receſſes, covered with moſs, diſpoſed in a certain beautiful order, and ſeparated from each other by due diſtances, where the ſaid birds meet every year in flocks for laying their eggs, and hatching their young. The eggs which are laid in the lower receſſes (for of theſe one is above the other) are eaſily taken by a ſpoon faſtened on a reed; thoſe which lie above are altogether inacceſſible. The eagles uſually build their neſts in the neighbourhood, the inconvenience and injury of which the young cormorants, to their loſs, often feel. The eggs of cormorants that build in the rock are variegated; the yolks, though ſurpaſſing in yellowneſs hens' eggs, yet have a flavour not altogether diſagreeable. But it is well to be noticed what qualities, from the colour and names aſſigned to each ſpecies of cormorant, have been mentioned above, ſhould be underſtood of the adult alone; for the young are all of one aſh colour at firſt, marked with various ſpecks, which colour as long as they keep they are called by the Norwegians *Sfaar Unger*, but by the Laplanders *Skavle;* but as ſoon as they begin to grow white (they begin in the autumn of the year they are hatched), in Lapland they are called *Zhjuormalas*. The Laplanders intent on catching cormorants, put down a rope into the ſea, to the end of which is fixed a hooked ſtick; the cormorant thinking it food flies to it eagerly, and devouring hook and all, is caught by the wily Laplander, who draws in the rope. By this artifice they take uſually great numbers of them, ſtrip their ſkins off, and expoſe them for ſale.

Certain birds, in Norwegian, *Taenner*, in Lapland called *Zhjerrek*, are to be met with in Finmark, and theſe not only common, and to be met with up and down in Norway, but well known by a black head, grey along the back and wings, white under the belly, and a cleft tail; but there are others too, if fame is to be credited, more uncommon, black all over the body, ſtunning the ears of the paſſengers by their perpetual clamours and noiſe. Their early coming to the ſhores is thought to preſage the early coming of ſalmon, and their entering the rivers.

The bird, called in Norwegian *Kive*, or *Kive Joen*, in Lapland called *Haſkel*, is numbered with the reſt: it is the ſame bird that is white under the belly, the reſt of the body being dark, a feather rather long coming out from the tail, with ſharp talons; in other reſpects like the leſſer cormorants. This bird ſtays ſometimes on ſhore, and in the marſhy grounds, yet adjoining the ſea, lays her eggs, and hatches her young. As long as it remains on land, it ſo ſhuns the face of man, that it flies waywardly when paſſing before his eyes. At other times it is ſeen at ſea, where its averſion to him is not ſo great, where it rather fearleſsly flies to the fiſhermen's boats, gaping at the pieces of caſt away liver and other offals of this ſort. Flying through the air, it purſues and preſſes the ſaid cormorants, and alſo birds called *Taenner*, mentioned before, until it compels them to diſcharge themſelves, and then by an amazing agility while flying, receives and devours what it takes.

A little

A little bird beſides is found in Finmark, called in Norwegian *Smoelle Bot*, or *Nord Beſt Fuglen*, but by the Laplanders *Nuorte Lodde*, or *Bjegguſh*. The Norwegian name, *Smaelle Bot*, it takes from its arrival, happening at the ſeaſon of the year when the inhabitants of Norland, called in Norwegian *Smaeller*, uſually come for the ſake of fiſhing; but it is called *Nord veſt Fuglen*, from the quarter of the world ſituated towards the north-eaſt, whence it comes by ſea to Finmark. This little bird ſomewhat exceeds in ſize the tame ſparrow; it is white under the belly, dark along the back, marked with various ſpecks, a ſharp beak, black colour, rather long feet, of grey colour, in great part cleft; whence it can live as well on land as it can at ſea. The fiſhermen on the ſight of this bird, little doubt of a north-eaſt wind *ſhortly coming on*. The Laplanders, in hunting them, uſe grooved guns, by which they not only uſually kill greater birds, ſuch as wild geeſe, &c. but even ſmall ones, ſuch as theſe.

Beſides the above-mentioned birds, in Finmark are ſeen the cuckoo, the woodpecker, the black-bird of the field, the ſwallow, the wagtail, a little bird, called in Norwegian *Rendeſteens-Snagere*, and *Ring-Erler*, and many others; but the ſtarling, the tame ſparrow, and ſome others, very frequent in other places, are not to be found in Finmark. The magpie, as I mentioned above, is very rare in this country.

CHAP. XIII.—*Of the Fiſhery.*

THE ſhores of Finmark, all along the coaſt of Norway, abound in fiſh. The great number of whales that were taken by the fiſhermen formerly, as well as the quantity of ſalmon taken at this day, in that very celebrated river Thana, may be adduced as proof. Of theſe not a few are exported, by reaſon of their very exquiſite flavour, in compariſon of others, ſo highly eſteemed; to ſay nothing of the great quantity of the various kinds of cod-fiſh, and of every kind of fiſh, the ſeas of Finmark abound in; and for the catching of which, the inhabitants of Norland flock to them in the very middle of winter, not without imminent peril of their lives. But the good ſubjects of this country are not only permitted ſecurely and quietly to enjoy the benefit of fiſhery and hunting on their annual return, that if a war ſhould break out ever ſo extenſively, between the Danes and neighbouring Swedes, they may purſue in ſafety, and at their leiſure, the uſual buſineſs of fiſhing and hunting; but it is further provided, that they ſhould exerciſe them with that degree of liberty that each may have full freedom, no one oppoſing, or preſuming to oppoſe, of going to get wood, of cutting down trees, of ſtripping bark from birch-trees, for either burning as fire, or building houſes (they uſually cover the tops of houſes with bark), of cutting graſs with a bill, of hunting fiſh, bird, or wild beaſt. For though a certain writer has thought fit to deſcribe Finmark as a country deprived of all the gifts of a kinder nature, and its inhabitants as men more than barbarous, and deſtitute of all intercourſe with other men; and though Saxo himſelf ſeems to deplore that vague and unſettled life to which the Laplanders are addicted and expoſed; though he writes, among other things, the Finni are the laſt inhabitants of the north, having embraced a quarter of the world ſcarcely inhabitable, from either culture or dwelling, an uncertain habitation and wandering home; yet the Laplanders' fiſh, veniſon, and other delicacies, are delightful, which may be ſought for in vain in more cultivated parts of the world.

It is not my intention to write on the fiſhes of the ſea about Finmark, tediouſly to deſcribe the external and internal form of every fiſh, which by others has been already done. It is ſufficient for me, after a deſcription, ſuch as it is, of the external figure of certain fiſhes, to ſhew ſomewhat more fully the method in part, by which the Laplanders catch them, in part how they are uſed to manage and turn them to their

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uſe, adding, as the occaſion may require, certain circumſtances that ſhould be known, and would caſt a light over natural hiſtory. About the feſtival of the purification of the Virgin, and therefore about the middle of winter, a great quantity of whales is ſeen, not only near the ſhores extending far into the ſea, but even in the receſſes themſelves of the inner bays, which, as if by the expreſs command of Heaven, drive into thoſe places the larger codfiſh, and other fiſh in great quantities, where they can be conveniently caught by the fiſhermen; ſo that theſe animals, altogether without the uſe and guidance of reaſon, are to be conſidered as inſtruments by which the benign goodneſs of Him adminiſters food to his people, inhabiting a country where they neither ſow nor reap. While theſe whales are driving the fiſh into the bays and on ſhoals, they uſually ſet up at the ſame time a horrid noiſe, whilſt a vapour-like ſmoke riſes up on each ſide of them. The inhabitants uſually call troops or cloſe bodies of whales of this kind *Hval Grin*. Experience has ſhewn, it is by no means ſafe to approach too near a troop of whales driving and hunting the leſſer fiſh, when fiſhing boats have been not unfrequently overſet by their being in the way. Under the canicular heats when whales meet for the purpoſe of procreation, it is alſo equally dangerous to come near them, who take, as it ſeems, any fiſhing boat for a mate. To avoid this danger, caſtor-oil, which is very hateful and intolerable to the whale kind, is thrown into the ſea, and, in defect of this, benches, empty tubs and ſuch things as are at hand and the occaſion ſupplies, with which, while the whale is playing, the fiſhermen expoſed to the danger make good uſe of the opportunity of getting off. At the time when the whales meet for the purpoſe of procreating, the ſperma ceti is found here and there, either floating on the water, or caſt upon the ſhore.

Among the whales which are to be met with in the ſea about Finmark the following are the principal: 1ſt, The whale, which by the natives is called *Ror-Hval;* 2d, the whale, from the very great ſize of its body, called *Stor-Hval*. There are whales of this kind which drive the fiſh into the bays and on the ſhoals. 3dly, The whale, *Trold-Hval*, a beaſt of immenſe bulk covered with ſcales. This monſter is ſaid to raiſe a horrid noiſe from the waters; to him is aſſigned at the ſame time a diſpoſition to overturn the boats of the fiſhermen wherever he finds them, and the more to be dreaded by the ſailors, as he riſes ſeldom from the deep where he lies hid. 4thly, The whale which is commonly called *Nord Kaperen*, accuſtomed to come from the icy mountains at Cape Nord, the laſt promontory, whence its name alſo. Whales of this ſpecies are incredibly ferocious and untamable, very dreadful and dangerous to fiſher-men; but they are ſhort in ſtature, with a thick and ſhort head, whence, in the Norwegian language, they are called *Stubben*.

There are various figures of whales that preſent themſelves, to be found among the writers of natural hiſtory; and in a late deſcription of Greenland, engraven on copper ſo neatly and accurately, that it would be ſuperfluous altogether to repeat them here. As ſoon as large bodies of whales, as juſt ſtated, at a certain ſeaſon of the year, gather round the promontory of Cape Nord, ſtrangers then frequent for fiſhing theſe ſhores. For preſſing the oil from the fat of whales they took up their reſidence in Kielvigia and the iſland *Sor-Den* in Weſtern Finmark. In proceſs of time the Spaniards alſo from the province of Biſcay made the experiment of fiſhing in theſe countries, differing from former fiſhermen in this reſpect, that they uſed to preſs the oil from the fat, not on the land but in their ſhips; whereas the Laplanders formerly, inhabitants of the bay of Porſanger, applied themſelves to the taking of whales by inſtruments of their own invention. It ſometimes happens, that whales, either mortally wounded by the Greenland fiſhermen, or killed by marine dogs, are caſt on the ſhores of Finmark. The kings

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of Denmark and Norway formerly claimed part of this prize, until Chriſtian V. of glorious memory, moſt humanely granted the whole to the people of Finmark, by a royal edict, bearing date the 11th of Auguſt 1688. Hiſtory ſuggeſts to me, writing on whales thrown by accident on the coaſt, an extrordinary and pretty tale, yet true, which I ſhall beg leave to relate. Certain Fiſhermen of Finmark fell by chance on a dead whale floating near the ſhore, which, as they were not able to get to the neareſt coaſt on account of their being few in number, one of the ſociety attempting an unuſual and memorable act, deſcended alone from the boat on the whale, toſſed and almoſt overwhelmed by the waves, whilſt his friends ran home to call for further aſſiſtance. Meantime this bold fiſherman, prodigal of life, was ſitting regardleſs of danger on the floating whale; and, leſt he ſhould be ſhaken off by the conſtant beating of the waves, into the ſea, he ſcooped a cavity to fix his feet in, with a knife, in the back of the beaſt, hoiſting at the ſame time an oar, that his returning friends might have a ſignal by which they ſhould recognize their companion in the open ſea. The matter anſwered expectation; thoſe that departed now returned, and brought ſafely to the ſhore their companion with his ſpoil.

The marine dog, in Norwegian *Staalhenning;* in Lapland *Fakan*, is ſeen alſo on theſe ſhores. It is not very unlike the leſſer whale, nine or twelve cubits long; he has a noſe ending in a ſharp point, tuſks in each jaw a finger's length, and a long fin on the back, repreſenting a kind of ſpear placed on end. Whales have no enemies more deſtructive to them than theſe very dogs, by whoſe ſavage and ſaw teeth they are often ſtruck at and killed. For no whale of whatever ſize or ſtrength ever exiſted but muſt fall ſhortly a prey to even a few of theſe dogs; and, though it ſhould make for the ſhore to avoid their hoſtile attacks, yet will theſe dogs not only follow but even effect, by repeated blows of the teeth, that it ſhould return and become their prey. A whale, when beſet around by the ſaid dogs, is ſaid to ſet up a horrid ſavage noiſe.

A certain kind of fiſh is alſo found about Norway and in the ſea about Finmark, known under the name of *Springere*, that is, the leaping fiſh; they are of a black colour along the back, whitening under the belly, four or five cubits long, and are ſeen ſpringing up from the ſea with a great noiſe of the waves; from theſe frequent ſprings or bounds they have taken their name; nor is it indeed unpleaſant to ſee many of them ſporting together in the water. They are commonly to be met with at a diſtance from the ſhore in the vaſt ocean; it ſometimes happens, eſpecially in the ſpring time, that they penetrate into the very receſſes of the inner bays, where uſually they are taken with caſting nets. They differ from other fiſh in this, that, when ſhut in by the net, they not only try to eſcape by getting away, but make towards the ſhore with all their ſpeed, the conſequence is, that they are taken with the greater eaſe and certainty.*

A certain fiſh or rather marine monſter, called in Norwegian *Brugden*, is ſometimes ſeen alſo in this ocean. It is equal in ſize to the common whale, has a very dark ſkin, and a hunch on the back with which it is ſaid to overturn fiſhing boats. It preſents itſelf to the view ſometimes in a very calm ſea, but, on the gentleſt aſpiration of wind, regains as quick as poſſible the bottom of the ſea, whence, it is plain, that even the lighteſt blaſt is intolerable to it.

All the ſeas here and bays are full of the dolphin fiſh, called in the Norwegian *Niſer*. The manner of this fiſh, which is to be met with in Denmark as well as Norway, rolling itſelf on the ſurface of the ſea, is too well known to all to need a mi-

* This ſeems the *Delphinus Delphis* of Linnæus, according to Gunner, in his note in this paſſage.

nute deſcription from me. The dolphin is not unlike the mackarel, certainly not triangular, as it appears, when ſwimming, to the ſpectators on firſt view. Yet it differs from it, as well in the colour as in the ſize of the body; but the reaſon of its appearing triangular to the ſpectators is, that gamboling in the ſea, it can turn itſelf ſo into folds, one part being under the water and the other above. The Laplanders uſually kill them with muſkets, where it is to be well obſerved by the hunter that the bullets ſhould be ſhot a little before the dolphin riſes from the water, otherwiſe it would from its gambols and turnings eaſily eſcape the gun. This fiſh is frequently met with repoſing careleſsly on the waters when the ſea is calm. The Laplanders, as well as the inhabitants of Norwegian Finmark, are very fond of the fleſh and fat of the dolphin.

The large ſkate (*lamia*) in Norwegian *Haa Skjerding*, in Lapland *Akkalagges*, are not found in any great numbers in this ſea. This ſkate is of an aſh-colour along the back, inclining yet to a dark and black; white belly: it is covered with a hard ſkin, uſually has dark round eyes, wide mouth turned downwards, yet it is without bone, in the place of which are cartilages or griſtles eaſy to be diſſected. It has a very fat liver, from which is ſqueezed an abundance of oil, and beſides ſo large that one liver is thought ſufficient to fill a whole tun. In ſome of them are found young; but ſo great and inſatiable is the gullet of this fiſh, that the larger devour the ſmaller kind, as it appears from the following narrative.—A certain Laplander from the bay of Alten had once taken ſome ſkates of different ſizes, and had gutted and faſtened them by a rope to the ſtern of the veſſel, with a view that, agreeably to the cuſtom of the country, he ſhould prepare from them ſome pieces, called in Norwegian *Rav Rekling*; it ſo happened that, of thoſe he caught and that were floating at the ſtern, he miſſed one, but could not account for it; ſoon after he took one much larger, in whoſe ſtomach he found the one he had lately loſt. Theſe fiſh are not only of an immenſe and inſatiable appetite, but even very injurious to fiſhing nets, and all other piſcatory inſtruments which are uſed for the taking of the larger flounders, and the various kinds of codfiſh, and all other fiſh. They bruiſe and tear with their rough ſkin and ſharp teeth not leſs the machines for taking them, than the fiſh entangled and caught in them. Yet it frequently happens, that theſe plunderers, the leſſer particularly, become themſelves, by this means, the booty of the fiſhermen, entangled in the very nets which they endeavour to tear aſunder. The Laplanders catch them by a ſtrong rope of twiſted hemp, to the end of which is faſtened not only a ſtone of no ſmall weight, but even an iron chain two cubits long, from which is ſuſpended alſo an iron hook of extraordinary ſize, with the bait prepared from the putrid carcaſes of dolphins. The fiſhermen, perceiving the ſkate has ſwallowed the hook and bait, ſuddenly draws in the rope, with his prey that is faſt to it, with all his might, which if he did not immediately, the ſkate would firſt devour the hook, then the iron chain, ſoon after the ſtone, and at length alſo part of the rope alſo when ſlackened, and, cutting through the very thick rope with the ſharpneſs of his teeth, having deluded the fiſherman, he would make off. But getting him near the boat, they either beat him with a wooden cudgel, or, having a knife at hand, adapted for the purpoſe, they ſtab him, or pierce and pull him to death with an iron hook. They then extract the liver, and throw the carcaſe into the ſea or into the boat, and carry it home to be cut up into pieces. In thoſe places where fiſhing is carried on, the fiſhermen take care that certain oblong veſſels ſhould be let down into the ſea, filled with the putrid entrails of ſalmon or dolphins, and covered with the branches of trees, which, leſt they ſhould be waſhed away by the ebb and flow of the tide and waves, are preſſed down with ſtones. But by reaſon of theſe ſaid

veſſels

veſſels being without cover, it is ſaid, that the bait heaped up in them more eaſily draws the fiſhes by its ſcent. This method of taking the ſkate is alſo in uſe in the other parts of Norway. The Laplanders are uſed to take the ſame fiſh with a certain fiſhing inſtrument, called *Stang-Bad*, formed of a long pole, to the end of which are appended thongs, chains, and iron hooks, furniſhed with bait, and as the mouth of the ſkate is under the jaw, they cannot ſwallow but on their backs, ſo the fiſherman muſt take care that the hook that is to catch them is to be raiſed a little above the bottom of the water.

The fiſh, which in Norwegian is called *Haabrand*, is alſo to be met with in this ſea. The ſkate, if you look to the bulk of the body, is leſs, but in the colour and roughneſs of the ſkin it is not much unlike it. It carries on its back certain fins raiſed up, which the water, while ſwimming, draws out like a ſword. It frequently gnaws through the ropes of the fiſhermen, yet ſuch is its boldneſs and greedineſs, itſelf frequently is made a prey.

The fiſh which the Norwegians call *Haamer* is found here too. It is about three cubits long, while under the belly green, along the back inclining to black, not unlike the fiſh which in Norwegian is called *Springer*, in ſhape and habit of body. The liver with which it abounds is very fat, round in ſhape; the fleſh is taſteleſs, and altogether uſeleſs.

In the ſea about Finmark is alſo found the fiſh, called in Norwegian *Haa*. Fiſh of this ſort are generally white under the belly, and have a ſmall horn (after the manner of the *Lamia*, of which we ſpoke above,) near each fin of the back, which is brought into a point and raiſed upwards. But this fiſh is much leſs than the *Lamia*, being about one ell in length. The tail as the whole ſkin is rough, and uſed for various purpoſes: the liver fat and abounding with oil; it has ſpawn in the belly with which the natives make cakes. In the ſouthern parts of the kingdom of Norway the peaſants make pottage from the eggs of the *Haa*, in Norwegian called *Haae Dravle*, but as the eggs are ill taſted, ſo are the meſſes prepared from them. And though this very fiſh itſelf taſtes ill yet it can be eat, if it is well dried in the air, or laid up in ſalt. The manner of catching this fiſh is the ſame through all Norway.

There is an abundance of large flounders in the northern ſeas. The large as well as ſmall of this fiſh is called in the Norwegian by the common name *Ovejte*, but in Lapland *Baldes*. But the Laplanders aſſign to this fiſh different names from the difference of its ſize. The leaſt of all of its kind is called *Raejhjek*, ſmall, though a little larger than the former, *Gad*; next in ſize to this *Rad'ke-Guelle*, in Norwegian *Styving*; larger than this *Leppadak*, and that of a ſize ſufficient to fill up a whole tun or larger veſſel they call *Oaaivadak*. The larger kind bears a very near reſemblance, in the ſmoothneſs of its ſkin and fins on each ſide and all over the body, to the common flounder, but in ſize, the wider opening of its mouth and in the ſhape of its tail, is very different from it. The greater flounder is generally of a black colour nearly along the back without ſpecks, and white under the belly; the liver is of no uſe, but the ſpawn is the more valuable as the natives uſually put it on their bread, and, mixing it with flour, make it into cakes, called *Fladbred*. They frequently cut the ſaid fiſh into long pieces, and cut off the fins with a very fat part, calling the one *Rav* the other *Refling* or *Staarree-Oveite*. Theſe pieces are in great eſteem, not only through all Norway, but are exported to Denmark, and no doubt to foreign parts, highly valued for their excellent reliſh. When the Laplander perceives the larger flounder faſtened on the hook, he inſtantly draws in the line, but, finding him violently reſiſting, he relaxes, which he does by turns, until the fiſh by yielding and reſiſting is entirely worn out and weakened,

on which he at once draws in the line and fiſh upon it, now no longer ſtruggling, and ſtriking it with an iron hook, (which the Norwegians call *Klaepp*,) throw it into the boat; this mode of taking flounders is in uſe through Norway, and made uſe of particularly in the ſpring by the Laplanders; but in ſummer there is another mode, called in Norwegian *Cang-Bad*, by a line and many hooks placed at due diſtances from each other. The greater flounders uſually keep in the ſea, eſpecially where the bottom is covered with a white ſand. Near to the iſland *Bug-Den*, in Eaſtern Finmark, flounders are to be met with ſo differing from the reſt of the kind, that not only along the back, but even under the belly and all over they are black, and exceed them far in fatneſs and taſte.

The ſea about Finmark produces the leſſer ſpecies, *Flyndrer*, excellent in colour and flavour, white under the belly, dark along the back and interſperſed with reddiſh ſpecks. Flounders of this ſort are uſually caught with a rope line with many hooks, baited with certain ſmall black worms dug out of the ſand, that is covered and extended to the bottom of the ſea; or with a plummet line furniſhed with an iron hook, let down by its own weight on the flounder lying careleſsly on the ſandy bottom. Beſides there are many ſpecies of flounders, of whom ſome are called *Culd Flyndrer*; others rough ſkinned, called in Norwegian *Sandſkraa*, in Lapland *Guormak*.

The ſpeckled cod, or the greater, and its various ſpecies, all moſt excellent in their kind, and a conſiderable part of the trade of which the commerce of Finmark conſiſts and by which it flouriſhes, are found in great abundance in this ocean; certainly no other ſeas produce better. A certain ſpecies come from the open ſea into the inner bays in ſummer, ſhort and round headed, by which they are diſtinguiſhed from others of their kind who remain there the whole year, and are leaner. About Chriſtmas, another ſpecies of codfiſh, full of moſt excellent ſpawn, approaches the ſhores; the inhabitants call them *Soelhovve-Torſk*; there is beſides another ſmaller ſpecies which come from the weedy places they frequent, called in Norwegian *Tare-Torſk*. Theſe aſſume from the place they keep in, one time a dark colour, another time a colour inclining to white. But the Norwegians uſually call the cod that is ſpeckled, ſmall, and not full grown, *Modd*, or *Kropping*, but the Laplanders *Gakran* and *Rudnok*. The time of catching the ſpeckled cod, conſidering the various ſituations of Finmark, varies very much. But notwithſtanding the ſaid fiſh come in greater numbers at certain times of the year than others to the ſhores, yet they never fail altogether. They are caught partly by a rope line and hook, furniſhed with bait, and let down from the ſide of the boat to the bottom; partly by a rope line ſet with many hooks, and extended along the bottom of the ſea. Nets, which are very much uſed elſewhere, particularly by the ſouthern inhabitants of Norway as inſtruments of fiſhing, are not in uſe among the Laplanders. The larger cod, which are caught in winter, are laid up in certain fiſh-houſes ſo conſtructed with lattice-work, in layers freſh and raw, ſo as to be ventilated. Fiſh frozen by the intenſeneſs of the cold in theſe houſes, which the natives call *Skiaae*, keep until ſpring, when the air begins to ſoften, at which time, leſt giving way they ſhould begin to putrify, they are taken out and are hung to dry in the wind in other houſes, called *Fiſke Cield*. Cod alſo taken in the ſpring, when the entrails are taken out, are alſo hung to dry in the wind in the houſe called *Fiſke Cield*. Fiſh of this ſort from the ſhape they take from being ſo managed, are uſually called *Rundfiſk* or *Stokfiſk*; thoſe taken in ſummer, unleſs they are cleft down along the middle, and the entrails and back-bone taken out, by reaſon of the heat at that time, as alſo little worms which the flies lay in them, could be by no means preſerved from putrefaction. Fiſh managed ſo is called *Rotskler*. But it is to be obſerved by thoſe unacquainted with theſe matters, that the

codfiſh

codfiſh called *Stokfiſk*, if it ſhould harden from cold becomes ſpongy, and that if a miſty air ſhould lay hold of it while drying, it contracts a certain colour leſs grateful to the dealers in codfiſh.

A fiſh comes alſo to the ſhores of Finmark which the natives call the king of the ſpeckled codfiſh. It uſually has a ſort of chubbed head, riſing in the ſhape of a crown, broad forehead, the lower jawbone a little projecting, but reſembling the reſt of his kind in every other particular. And as the bees have their king, the leader of the whole ſwarm, ſo alſo is this ſaid king of the codfiſh ſaid to go before them, and point out the way under the guidance of Providence, tending from the deep to the ſhores. Hence does it happen very rarely that he is taken but among thick ſhoals of ſpeckled codfiſh, which the natives from the number and denſity call *Fiſke-Bierg*. The fiſherman aſſert from the worn and battered ſkin of this fiſh, that it eaſily appears that he has been very much vexed and haraſſed among many. The king of the codfiſh is dried whole in the air differently from the reſt, the heads of which are uſually cut off before they are hung up in the wind. The ſuperſtitious common people believe that the fiſherman who happens to take the king codfiſh will be very fortunate from that time, and that he will afterwards enjoy the beſt and greateſt ſucceſs in fiſhing.

The long cod, are alſo in Finmark, the beſt of thoſe are they that are taken near Kiaelvig, and the iſland Ing-Den. The black cod, commonly called *Craaſey*, the greater as well as the leſſer fiſh, very well known through Norway, is very frequent in the ſea of Finmark. The larger of this kind of fiſh is called in Norwegian *Seyobs*. Beſides the common and uſual way of catching the black cod elſewhere through Norway, the Laplanders have contrived the following method. Whilſt theſe fiſh are ſporting and ruſtling in great numbers as in a troop, in the ſea, the wily fiſherman ſtands at the prow of the boat, furniſhed with a hooked pole, with which he ſtrikes, one after the other, down, and flings them into his ſmack. It frequently happens, which I myſelf ſaw, that a great number fly ſporting to the very ſhore, when the fiſhermen who are ſtanding there, not miſſing the opportunity, and furniſhed with their hooked poles, kill many, and fling them aſhore.

A certain fiſh, called by the natives *Soborting*, of a reddiſh colour under the belly, but ſilvery through the reſt of the body, red fleſh, but very delicate, is found too in this ſea.

Among other fiſh of the ſeas of Finmark, is to be found one, known here and there, through Norway, called agreeably to the varying dialects of places, one time, *Rogn-Kiolſe*; another time *Rogn-Kiaefse*, but in the Lapland, *Akkazinzo*. This fiſh is of a dark colour, ſhort and thick in the ſhape of its body, ſharp fins ſtanding out on each ſide, and exceedingly abundant in ſpawn. The fleſh, the leſs agreeable to the palate of men, is the more grateful to the other kind which prefer this fiſh to all others.

Herrings, and theſe the moſt excellent of their kind, are here in immenſe numbers, which the Laplanders through ignorance neglect catching, unprovided with any means for that purpoſe. They take juſt enough, as neceſſity may require for bait for cod-fiſh, and other fiſh; for which purpoſe they uſually draw with a boat ſuch as are driven by the birds, or playing careleſsly on the tranquil ſea.

A certain fiſh called by the natives *Lodde*, is alſo to be met with, of which there are two kinds, called in Norwegian the one *Iern Lodde*, the other *Sild-Lodde*. Thoſe of the kind called *Iern Lodde*, are of a triangular form on the back, green colour, inclining to dark, and under a white belly. Theſe ſaid fiſhes uſually come in immenſe ſquadrons to the ſhores of Finmark, but not annually. On their approaching, they are accompanied by other fiſh, or they are alone. After ſometime elapſed, they return to the

the ſandy bottoms of the ſea near the ſhore, with all the fiſh they collected round them, to the no ſmall injury of the fiſhermen. Thoſe called *Sild Lodder* are leſs than the others. Theſe as well as the former are ſeen at the ſame time in almoſt incalculable numbers, accompanied not only by great quantities of fiſh, but even vaſt crowds of cormorants, and other birds of the ſea, filling all places round with their harſh and diſagreeable noiſes and clamors. When they firſt come, they remain quiet, a little time, in the bottom of the ſea, which they chance to find, in order to ſpawn; of which, the greater cod-fiſh, as well as other fiſh being remarkably greedy, ſwim in crowds to it, and though the ſaid *Sild Lodder*, departs again when it has ſpawned, yet the other fiſh ſtay, kept by the fondneſs of the ſpawn. Never is the alertneſs of the fiſherman called more into action, for ſo great is the ſupply by this event, that fiſhing boats, provided fiſhermen are not wanting on the preſs of the occaſion, can load and unload even ſeven times the fiſh that is taken in a ſhort time. There is no better or more deſirable bait for catching fiſh, than what is prepared from the *Sild Lodder;* yet the ſame is ſo injurious to the rein-deer and ſwine, that even the leaſt portion occaſions the falling off of the hair, and ſometimes even death itſelf.

On the coaſts of Finmark, under the ſea weed, is found a certain ſmall and rather long fiſh, not unlike the conger eel, which the inhabitants of the place, Norwegians, call *Tang-ſprael*, but the Laplanders *Stag-goſh*, ſignifying in Lapland a ſtaff or ſtick.

Beſides the above-mentioned fiſh, there is to be found in Finmark, as elſewhere, near the Norwegian ſhore, the ſturgeon; the ray, in Norwegian *Skade;* the *Redfiſk*, that is red fiſh, in Norwegian *Uer*; *Lyr*, the leſſer cod-fiſh, in Norwegian *Hyſe*, in Lapland *Djukſo;* the leſſer, or white cod-fiſh *Broſmer*, and innumerable others. But it is to be obſerved, that the mackrel, congers, or eels, &c., fiſhes very well known and very numerous along the Norwegian ſhores, yet are not to be found in the ſeas of Finmark; crabs of the rough and teſtaceous kind, in Lapland *Suobbo*, and ſhell-fiſh are alſo here; lobſters are found, but no oyſters.

The Lapland women on the coaſt employ themſelves, together with their huſbands, willingly and faithfully in the fiſheries, differing from the peaſant women of Norway, to whom theſe occupations ſeem too burthenſome and tireſome. The mountain Laplanders coming to the coaſts, together with their families and herds of rein-deer at a certain period of the year, now and then uſully employ themſelves in fiſhing.

And as the above-mentioned kinds of various fiſh are found in the ſeas of Finmark, of which each ſpecies has been deſtined to its own proper uſe by the all-wiſe Creator, giving ſome to man for his nouriſhment, others for their oil; and to ſerve the purpoſes of commerce, and the carrying on of trade; ſome alſo are turned to bait with which fiſh is caught; ſo alſo in the ſame ocean, are to be met various monſters, prodigious in their form and ſize, wonderful to view, and ſo furniſhed, that they ſeem to give more ample materials for writing, than benefit to mankind. Among thoſe monſters of the deep, which are ſeen now and then in this part of the Northern Ocean, one in particular, an immenſe fiſh, called the *Kraken*, by the inhabitants of Nordland and Finmark, holds the firſt rank by right, whoſe form and magnitude of body is ſo unuſual that the ſea does not produce a ſimiliar prodigy. The ſaid fiſh is very ſeldom ſeen above water, as delighting in the depths, where quiet and almoſt immoveable it is ſaid to hide itſelf, environed with an incalculable number of every kind of fiſh. When the fiſherman, ſearching the ſea in order to find a fiſhy bottom, arrives by accident at the place where this monſter is ſkulking in the bottom below, he thinks from the great number of fiſh he has met there, that he has found a place, that is the moſt fit for fiſhing; but when the monſter that lies hid, touched with the plummet

that is let down, begins to move and gradually get up, which is eaſily aſcertained from the ſpace, that is between the bottom and the boat, becoming gradually leſs, he finds that it was not a bottom as he believed, but an immenſe fiſh that was hid below. Meantime the fiſherman is not ſolicitous about getting away, knowing that this monſter is very ſlow in moving, and advances ſo ſlowly, that ſcarcely within the ſpace of two hours he can riſe from the bottom to the ſurface of the ſea. Yet is he not altogether negligent of his ſituation, finding by the plummet that the monſter, gradually emerging, is now at no great diſtance from the boat. And without delay, the fiſherman having juſt got away, he begins to appear above the water with huge and monſtrous claws, of a variety of ſizes and ſhapes, giving the idea of a wood, thick, with different trees, ſtripped of their bark; at firſt erect in the air, but ſoon after complicated. The ſpecies of this monſter, how horrid it is and deformed, ſcarcely can thoſe who have ſeen it, expreſs with words. The inhabitants of Finmark and Nordland call this monſter *Kraken*; elſewhere through Norway, eſpecially among thoſe of Carmeſund, in the dioceſe of Chriſtianſand, it is called *Brygden*, yet from another marine monſter of the ſame name, deſcribed by us, it muſt be carefully diſtinguiſhed.

The ſea of Finmark alſo generates the ſnake, or marine ſerpent, forty paces long, equalling in the ſize of its head the whale, in form the ſerpent. This monſter has a maned neck, reſembling a horſe, a back of a grey colour, the belly inclining to white. On the canicular days, when the ſea is calm, the marine ſerpent uſually comes up, winding into various ſpirals, of which ſome are above, others below the water. The ſeamen very much dread this monſter; nor, while he is coming up, do they eaſily entruſt themſelves to the dangers of the deep.

That monſter, which the Norwegians commonly call *Hav-Mand*, and *Hav-Frue*, many affirm, to whom credit is due, to have been often ſeen in this ocean. The male, which is called in Norwegian *Hav-Manden*, is deſcribed as a monſter reſembling a very robuſt man, of full ſtature, brown ſkin, long beard, hair over the ſhoulders. The female, or *Hav Fruen*, is ſaid to appear in human ſhape, long hair, ghaſtly viſage; ſometimes they ſay ſhe is ſeen under a different likeneſs. But the inhabitants affirm that theſe monſters are never accuſtomed to appear but in a horrid tempeſt, not only dreadful to ſeamen, but often fatal, which inſtantly follows.

And as all ſeas and bays abound in various kinds of fiſh, ſo no lake nor river, however ſmall or ignoble, but in proportion to its capacity, contains fiſh, either natives of the ſtream, or brought by rivers from the ſea into them, all ſubſervient to the uſe of man.

Among the fiſh in the lakes of Finmark is found alſo the pike, the genus being called in the Lapland, *Haug*, the ſpecies, if a little larger, *Golees*. It feeds on frogs and toads in common; and devours other fiſh alſo, as is well known; nor does it ſpare its own kind. The perch alone is excepted in the number of thoſe in danger, protected by the benefit of its very ſharp fins, with which it is armed. The Laplanders kill the pike in ſummer, then accuſtomed to come to the ſhores, and when baſking at its ſecurity, to omit other methods by which this fiſh is uſually taken.

In the lakes of Finmark a certain fiſh is found, in Norwegian called *Lafe*, in Lapland *Njak*; nor unlike the ſea-fiſh *Broſmer*, deſcribed above by us, in ſhape as well as colour.

In the ſame place, that kind of fiſh is to be found in great plenty, called in Lapland *Raudo*. Fiſh of this kind are uſually red under the belly, dark on the back, and are much recommended by their delicate flavour.

A certain

A certain ſpecies of fiſh, of moſt excellent flavour, called in the Norwegian *Blege*, is to be found in the ſame lakes; its ſkin is very ſmooth, reddiſh colour under the belly, the reſt of the body white, inclining to a ſilvery hue.

The perch belong alſo to the lake fiſh of Finmark, which the Laplanders call *Vuſkon*; alſo a certain ſmall fiſh, white ſkin, of excellent flavour, called in Norwegian *Siik*, the fiſh called by the Laplanders *Haerre*; as alſo another furniſhed with ſharp fins, in other reſpects not unlike the herring: the Laplanders call it *Zhjofzhja*; to which is alſo added another, called in Lapland *Ruoude-Golmek*, ſmall, but furniſhed with very ſharp fins.

Trout, and their various ſpecies, all the beſt of their kind, here are to be met with. The Laplanders uſually give them different names, ſuch as *Damok*, *Vaalas*, *Guuvzhja*; and all theſe the moſt excellent. I never taſted any equal to them.

In the lakes of Finmark bordering on Ruſſia, a certain fiſh is ſaid to be found, not very unlike the carp, either in ſhape or taſte.

In ſummer the Laplanders fiſh in the lakes with caſting nets, as well as wove nets. Yet in ſome parts of Lapland it is a cuſtom to faſten various beams at the bottom of lakes, to which rope lines are fixed, furniſhed with hooks, made from the juniper-tree, on which the bait is put; by which method of fiſhing they ſometimes take a large number of fiſh.

In the winter, when all places are bound with froſt, they catch fiſh by letting down nets in the ice, and in this manner: they join certain long poles together, connecting the one with the end of the other; nets are faſtened to theſe poles ſo joined, and a rope fixed at each end of the whole order. Thus prepared, they break the ice with an axe, and opening a way, let down the nets into the lake, to be carried on to another opening formed in the ice from the oppoſite ſide, obſerving this order, that the lower edge of the nets ſo extended ſhould touch the very bottom, the upper being turned to the ice; and leſt the line of nets may be broken by the continual motion of the waters, they take care that each end of the whole chain of them ſhould be faſtened with a ſtrong rope to certain ſtakes erected in the ice, and driven down as far as poſſible. Fiſhing nets are commonly done round with a rope from twiſted hemp; but the Laplanders, as wanting hemp very much, make uſe of in its place the very thin fibres of trees. In the place of cork, which other fiſhermen fix to the upper part of their nets, that they ſhould more eaſily ariſe, the Laplanders not unuſually fix the outward bark of the birchen-tree; with which bark alſo it is their cuſtom to join little ſtones to the lower part of the nets, that they may go down to the bottom.

If that part only of the lake adjoining the land is frozen up and covered with ice, the Laplander leans down over the bank to ſee what fiſh may be at the bottom, where ſhould he ſee any, he rolls down a piece of ice, cut with an axe from the edge of the frozen part, on the fiſh with great dexterity, to cruſh him by the weight of it: this mode of fiſhing the Laplander can only practice in the ſhallows of the lakes.

Among the freſh-water fiſh of Finmark the ſalmon is by right to be firſt mentioned. This fiſh is called by the Laplanders in general *Luoos*; but the male, *Goaaigjem*; female, *Duovve*. The ſalmon with a rough ſkin is called in Lapland *Koms*. The Norwegians call the ſmall ſalmon in their language, *Tart*.

The river *Thana*, flowing through eaſtern Finmark, is the moſt diſtinguiſhed river of thoſe that are abounding in fiſh, of which there are many. This river takes its riſe in the moſt remote mountains of Lapland, ruſhing through plains, vallies, and mountains, in a full and free channel, until increaſed by various torrents and ſmaller rivers, it emp-

ties itſelf into the ſea, from the bay of *Thana*, with a great noiſe of waters. Among the ſmaller rivers, by whoſe courſe it is increaſed, that is conſpicuous, which flows between *Thana* and *Waranger*, formerly abounding in beavers and pearls, as appears from the protocol of a judicial meeting held on the tenth of February of the year 1652, where the ſpecial care of this river is ſpecified, as enjoined on the Laplanders. But this river Thana, which you may properly call the principal river of eaſtern Finmark, though it is diſtant ſome miles from the ocean, yet the marks of that great tide, and rapidity with which it flows, eſpecially in ſpring, when it is ſwelled with an uncommon thaw, can eaſily be remarked in the ſea at a diſtance from the ſhore. The ſalmon taken in this river differ much from thoſe that come into other rivers, in breadth, ſhortneſs, and fatneſs, and are accounted the very beſt of their kind. The fiſhing for them begins in this river in the beginning of ſpring, and ends again two weeks after the feſtival of St. John the Baptiſt.

The river Alten is the moſt celebrated river of all thoſe that run through the weſtern Finmark. It alſo has its riſe in the remoteſt mountains of Lapland, running down through woods and mountains in a channel, until getting into the interior receſs of the bay of Alten, it rolls itſelf into the ſea. This river carries along its waters ſo calmly and gently, that from its very mouth, where it empties itſelf into the ſea, to a high and ſteep rock, over which rolling itſelf with the great noiſe of its waters, it makes an immenſe cataract, it is navigable for a ſpace of ſix miles for fiſhing boats and ſmall craft. In this fiſhy river ſo large a quantity of moſt excellent ſalmon is taken, as would be ſufficient for filling a hundred, ſometimes two hundred tuns. The ſalmon which are caught about the feſtival of St. John, at which time we ſtated that fiſhing began in this river, are very fat, and beſides of ſuch a ſize, that a full tun can ſcarce hold ſixteen of them; but thoſe which enter this river when the autumn is approaching, are much leſs than the former, and at the ſame time lean. Dolphins are ſometimes ſeen in this river, lying in wait for the ſalmon ſtruggling along the ſtream. The royal governor of this province, the illuſtrious Claudius Gagge, is ſaid to be the firſt who undertook to build weirs on this river, for the catching of ſalmon. This example was afterwards followed with the greateſt ſucceſs. This happened, it is ſaid, on the eleventh year of the ſeventeenth century, when the royal houſe, as it is called, *Aar Den*, was built on an iſland of the bay of Alten, on account of the war then carrying on between the Danes and the neighbouring Swedes. There was then, as well as now, an entire free right of fiſhery on the ſame river, and free permiſſion granted to each, without any tribute being impoſed; but afterwards it was let out on certain conditions, at a yearly return of two hundred thalers; firſt to the Dutch, then to a ſociety of merchants at Copenhagen; afterwards to certain merchants of Bergen, in Norway, who undertook to erect and preſerve weirs on the river at their own expence. Among theſe the chief were citizens of Bergen, who ſhut up the river Alten with an expenſive and ſumptuous work, a number of workmen being hired at a daily ſtipend, who at a ſtated time ſhould every year diligently work for fifteen days together. Beſides ſixteen pounds of fiſh (valued at fifteen pence of our money), which together with board, and a quantity of brandy were diſtributed to each workman as his daily hire, ſo many pounds of fiſh being added at the end of each week. Two tons of beer, of Bergen, when the work was finiſhed, were collected for the whole body of the workmen; two quantities of eighteen hundred pounds weight of fiſh, worth fifty thalers. So great was the expence at which the inhabitants of Bergen ſtood to the ſeventy-ſeventh year of the ſeventeenth century, at which time laying aſide all further expence, they thought it better to purchaſe ſalmon from the Laplanders themſelves, who dwell by the ſide of the river. The fiſhery then

devolving to the Laplanders, who by degrees got the habit of erecting weirs on the river, each claimed that part of the ſtream which he had from the beginning as his lawful poſſeſſion, for him and his own for the future, belonging by full right and juſt title, to the total excluſion of all others from that place. The ſaid fiſhery is at this day carried on by peculiar regulations, ſo that it is not permitted to every one to exerciſe it at will. Thirty-ſix men are annually choſen, who have the ſole right, all others being that year excluded of fiſhery. The perſons choſen are from the common people, Laplanders equally and peaſants of the Finniſh nation, dwellers on the river. Theſe on each bank of the river throw up mounds, from beams and boughs of trees, fit for the keeping in and taking ſalmon. Theſe mounds are at due diſtances from each other; four men, neither more nor leſs, being appointed to fiſh within the limits of the ſaid mound. They run out as far as about the middle of the river, to the purpoſe that the ſalmon ſhould have full liberty of paſſing and re-paſſing the ſtream; and that thoſe whoſe mounds are farther off from the mouth of the river, ſhould not be defrauded of their juſt benefit; for if the river was laid over with mounds as with bridges, thoſe only whoſe mounds were built on the lower part of the ſtream doubtleſsly would enjoy the whole benefit, to the total excluſion of their aſſociates from all hope of gain. The mounds raiſed and diſpoſed in this manner are at length ſhut up by a dam, paſſing from the further to the hither ſide of the bank, within which whatever ſalmon is taken is common to the whole ſociety of fiſhermen. When, on the change of the year towards autumn, all opportunity of fiſhing has paſſed by, the fiſhermen to a man approach the ſaid cataract againſt the ſtream, where the ſalmon that have eſcaped the lower mounds have penetrated, but who, on account of the cataract being in their way, cannot get further. Here they let down their nets in the river, and drag them ſlowly all over the bottom of it, as it were by ſweeping, to the mouth, where, loaden with a great quantity of ſalmon, they draw them on ſhore, to the great amuſement of thoſe who are pleaſed with this kind of fiſhing. The ſalmon which are taken in each river, the Thana and Alten, are managed uſually in the following manner: when cut through the middle into two equal parts, well waſhed, they lie ſprinkled with a ſufficient quantity of ſalt for ſome days, afterward they are packed up in oak caſks, of a large ſize, rammed down cloſely and firmly with certain machines; brine is poured in through an orifice on the caſk thus ſtuffed, freſh and freſh every day, until all the muſtineſs that floats above is removed entirely, which is the duty enjoined chiefly on the caſk-maker. Salt of the very beſt quality muſt be uſed in the ſalting and preſerving ſalmon, which, unleſs attended to, foreigners, who uſually purchaſe the greateſt part from them, will not buy of them. The Kings of Denmark and Norway have given the greateſt attention to the promoting of the fiſhery of Finmark. Chriſtian IV., of moſt glorious memory, by a royal decree, ſigned May 4, 1638, ordered money to be ſent into Finmark to promote the fiſhery. Chriſtian V., by a decree, April 16, 1687, moſt humanely decreed, that no one ſhould purchaſe ſalmon from the fiſhermen but in ſpecie. At the cloſe of autumn, when the ſalmon becomes lean, and is no more ſaleable to merchants, the maritime Laplanders are accuſtomed to row out a little from the ſhore into the deep to take the ſalmon who at this time of year remain immoveable at the bottom of the ſea, with an iron-headed ſpear, called in Lapland *Harſes*. The fiſhermen employed in this buſineſs, leſt they ſhould be obſtructed by the darkneſs of the night, keep a light in the prow of the veſſel, from pieces of fir-tree and the bark of the birch-tree, which they call *Baral*. The Laplanders keep the ſalmon taken in this manner as food for themſelves, and lay it up in cheſts that are arched, and of a larger ſize, which, if they ſtand on legs, are called in Lapland *Njal*, but if not, *Buorna*.

The Swedes formerly contended that they had a claim to a certain part of the oftenmentioned rivers the Alten and Thana; for as they impoſed a tribute on the maritime Laplanders, as far as the peace of Knorod, in the year 1613, ſolemnly made between each kingdom, by which it was ſtipulated, that all kind of tribute and demand on the part of the crown of Sweden ſhould ceaſe in future; ſo they further demanded that two-thirds of every fiſhery were equally their right, as plainly appears from letters of King Charles of Sweden to the royal treaſurer of Finmark, dated October 30, 1596. Meantime the Swedes, by the force of this pretenſion on the ſaid fiſheries, ſent often fiſhermen into Finmark, who, obſtructed by the inhabitants, were compelled, without effecting any thing, to return: hence the matter broke out into public complaints. The commiſſaries of the crown of Sweden remonſtrated much on this buſineſs; and the governor of Swediſh Lapland, the illuſtrious Balthaſar Bech, in the month of November 1607, received not only an order from his ſovereign that he ſhould inquire, from the governor of Finmark reſiding at *Wardhus*, the cauſe, as alſo true information of the refuſal which the fiſhermen who were ſent out from Sweden to Finmark had ſo improperly met with; but he himſelf went into Varanger, with labourers and fiſhermen neceſſary for the management and diſpatch of this buſineſs, that he brought with him: he had alſo a treaſurer with him, who was to collect the tribute, and who was to reſide in Vaſoe, for the purpoſe of collecting the revenue from the Laplanders of Finmark; and alſo a prieſt, who was to reſide there and manage the holy affairs of that place, to whom, in conſideration of his labour, two-thirds of the ſalary which annually was paid hitherto to the Daniſh clergyman ſhould be paid to him in future; and all other dues of the diſtrict which the treaſurer of the province, Bartholomew Henricſon, had remitted to the governor of the King, Olaus Peterſon, by letters dated February 23, 1608. At the ſame time, the ſaid-mentioned Balthaſar Bech informs the governor of Finmark by letters, grievouſly complaining of the injury that was committed, as it ſeemed to him, that when the Swediſh labourers were going to erect weirs on the rivers, they were violently hindered by the inhabitants. To this was added a ſerious remonſtrance, exacting that a free right of fiſhery ſhould be granted, without any tergiverſation, to the fiſhermen daily ſent from Sweden into Finmark. On theſe remonſtrances being made by the crown of Sweden, and tranſmitted moſt humbly by the governor of the province to the Daniſh court, a decree of Chriſtian IV., dated December 20, 1609, was publiſhed, in which it is ſtrictly declared that all Swedes, as many as were to be found in Finmark, muſt readily depart from the country; that the crown of Sweden had no right over the fiſheries, or the other prerogatives and rights of the Kings of Denmark and Norway, by any claim whatever; that no Swediſh maritime Laplander had a right to fiſh in the ſeas of Finmark without permiſſion from the governor, and even then, not unleſs he would pay a yearly tribute for ſaid licence to the King of Denmark and Norway, as the rightful maſter of the ſea. The Swedes did not even then deſiſt; the ſaid Balthaſar Bech ſent again other workmen and fiſhermen, by an order, bearing date April 14, 1609, into Finmark to follow up the work, ſo ſtrenuouſly and actively begun, and to build a place of worſhip on the bay of Alten. But this attempt too of the Swedes was diſappointed, the new workmen being hindered, as one may ſuppoſe, by the governor of the province, who ſtript them of their axes, their other tools and working inſtruments, with which they came to work, as appears by the acts of the judicial aſſembly, dated May 9, held in the ſame year. After a variety of ſkirmiſhing, this whole contention was at length adjuſted, and terminated by the peace of Knorodſke, by which the Swedes renounced all claims upon Finmark. Beſides the ſaid-named river of Thana, there are alſo others in the eaſtern Finmark, diſtinguiſhed for the abundance and fiſhery of

ſalmon; ſuch as above others the river Neida, running by the weſtern ſide of the bay of Varangria. Its ſpring is to be looked for in the mountains of Ruſſia, but its mouth in the bay of Kiofiorden where the iſland of Kio is ſituated, in which the Laplanders who dwell on the river Neida uſually take up their ſtations when fiſhing in the ſea, while the time that is fit for taking ſalmon is approaching. Each bank of this river is ſhaded with birch-trees, luxuriant with branches. In the upper part is a cataract, nigh which the Laplanders approaching take ſalmon with a net, and a little higher, in weirs. To keep theſe weirs in repair they muſt not only croſs the water, but alſo go under it as divers. Ten ſalmon formerly coſt one thaler; what they ſell for to-day I cannot ſay.

On the eaſtern ſide of the ſame bay is a river, commonly called *Jacobs-Elven*, that is, Jacob's river. It is the ſame which flows from the very celebrated lake Indiager, and contains no ſmall quantity of ſalmon. The monks, to whom the fiſhery formerly belonged, took care the ſalmon ſhould be tranſported to Cola, a town in Ruſſia, and ſold to the Dutch trading there. There are more rivers that flow on the ſame ſide of the ſaid bay, not without note for their ſalmon fiſhery.

On the other ſide of the bay of Varanger a variety of rivers flow, which the ſalmon enter at a ſtated ſeaſon of the year, ſuch as, 1. *Jacobs-Elven*, that is, the river of Jacob, near the promontory *Finne Naes*, which is ſaid to run along the valley, delightful and ſhaded with an abundance of herbage and branching trees, and to contain a great quantity of ſalmon. The governors of Finmark formerly ſhut up this river with weirs, having brought builders fit for this work from Malmis, a city of Ruſſia. 2. *Komag Elven*, that is, the river Komag, which is ſaid to be at the diſtance of one mile from Kivergia. 3. *Sylteviig-Elven*, large and very fiſhy; alſo *Kongsfiord-Elven*, *Bersfiord-Elven*, *Bosfiord-Elven*, *Sandfiords-Elven*, and *Langfiord-Elven*, all of which, though with ſome difference, are ſaid to contain ſalmon. On the ſame ſide of Porſanger bay are rivers abounding with a great quantity of trout, as the *Beſter Botnens Elv*, which ſalmon alſo viſit, but uſually ſmall; *Biergebne Elven*, *Thomas Elven*, *Jabus Elven*, *Kalnaes Elven*, and others abounding in trout, gilt heads, and other ſmall fiſh, which the Laplanders call *Vaejek*. They catch fiſh of this ſort living in ſtreams, in a ſmall loop of ſlender twiſted oſier. Beſides the river Alten, the principal of weſtern Finmark, other leſſer ones are found in the bay of Alten; ſuch as Borſe-Jok, Furnaes-Jok, Dakko-Jok, Dalme-Jok, Gaidiſh-Jok, Gavouna-Jok, Halſe-Jok, Rain-Jok, Skirve-Jok, and Falle-Jok; the laſt ſix of theſe rivers contain trout and ſalmon, but they are ſmall and few. On the firſt of the ſaid rivers, called Borſe-Jok, are two mills built, the one for ſawing, the other for grinding corn; on the ſecond alſo is one, and on the laſt there are two. But it is to be obſerved, that the uſe of mills is new in this part of Finmark; certainly it was altogether unknown a few years back. Wood was cleft in Finmark into pieces or beams formerly, not by ſawing mills, but by hatchets only, by which mode of cutting only two pieces or beams were made from any piece of timber however large and ſtrong, when, by the aid of the ſaw, even ſix may be made from the ſame piece of timber. Almoſt all corn proviſion ground into flour was formerly imported by the inhabitants, and is partly obtained ſo even to this day, yet in ſuch a manner, that no ſmall portion of corn to be ground on the above mills is yearly at the ſame time brought in. In the bay of weſtern Finmark, commonly called *Kopper Fiorden*, is a river remarkable for ſalmon; and another in the bay of Porſanger flowing from the very celebrated lake *Leuneje-Jauvre*, of which we ſhall ſpeak hereafter. In this river many ſalmon are taken, yet more could be taken if greater care and dexterity were applied.

The knowledge, such as it is, of fish, and the method of catching and managing them, being communicated to the reader, I wish to add something of the manner in which the tythes from the fisheries are collected in Finmark. That tythes were in practice from the earliest times among the Norwegians, I am of opinion, is a thing well known. It appears from the records of the remotest times, that the great Lagebetter, king of Norway had levied tythes on his subjects from corn and other produce of the country, from the year of Christ 1268; that king Christopher, by a decree published in the year of Christ 1448, had ordained, that tythes should be divided into three equal parts between the church, the bishop, and the pastor of the parish; that king Frederic I. had ordained and had disposed of tythes by various decrees, is well known. And as to what belongs to Finmark, it is to be observed, that tything was introduced there later than elsewhere through Norway; yet in progress of time they were ordained, given, and accepted, until by royal authority and care they were brought into that order, that nowhere through all Norway were they more justly and equally paid. The payment of tythes from the fisheries, in what manner they were first instituted, and then brought into exact order, may easily be seen from the following decrees.

Since it has been known that certain factors trading through Finmark and Norland, exchanged fish, which the peasants had exposed for sale, for injurious and useless wares, such as brandy, bastar, rommenau, and, before a decimation was made, had transferred fraudulently to themselves the advantages, king Frederic II. by an edict, published at Esserom, bearing date the 17th of April 1562, has forbid such fraud for the future.

Certain Laplanders of the mountains, of the Russian and Swedish territories, having had the boldness to fish in the sea of Finmark, without having either asked or obtained permission, king Christian the IV. of glorious memory, has forbid the same, by a decree published at Scanderburg in Jutland, that it should not be lawful for the said Laplanders to fish on the shores of Finmark by any other condition than that obtained with respect from the royal governor, and paying tythes from the quantity of fish that may be taken.

Charles king of Sweden, at the time when he exacted tribute from the maritime Laplanders of Finmark, granted permission of fishing in the sea of Finmark to the citizens of Gottenburg, on the condition of duly paying the tenths from the quantity taken.

The Swedes being compelled to yield, by the peace of Knorodske, 1613, all pretensions on the maritime Laplanders of Finmark, the governor was commanded to exact tythes, by a decree of Christian the IV., dated the 10th of June of the next year, from the maritime inhabitants of the district, Laplanders as well as Norwegians, over which he presided, exercising the right of fishery in the sea.

The inhabitants of Finmark petitioning the king, on the iniquity of the governor, on the exaction of tenths, selecting none but the best and largest fish, and rejecting the small, his royal Majesty by a rescript to his governor, dated 22d April 1617, declares of his goodness, that it is his royal pleasure, that Laplanders as well as Norwegians should contribute for the future from the first hundred of fishes taken, eight; from the second hundred, nine, without any regard whatever to their size.

Though, from the tenor of the royal decree at Esserom, in the year 1562, tythes were to be paid from fish fresh taken, as well as those that were cured in the wind; yet there were persons who were daring enough to resist the law. Hence it was appointed, that a royal governor, a lawyer, a treasurer, and a secretary or inferior judge, should solemnly meet in 1620, in Skiotnings-bierg, to determine by law, that the portion of tythes due to the king in fish, at the time of the year when they are liable to be spoiled by insects, should be salted; and to make an order, that no one from that time

should

ſhould buy or ſell fiſh before they had duly paid the tythe, enjoining a fine of eight *ortungi*, (the *ortungus* is a kind of money,) and thirteen marks of ſilver to thoſe who ſhould do otherwiſe.

In the year 1646, the 24th of April, an edict of Chriſtian IV. was publiſhed, by which thoſe who exerciſed the trade of fiſhing in larger boats, commonly called *Dogger Skuder* or *Dogger Baader*, on the ſhores of Finmark, were ordered to pay the tenth part of the fiſh taken to the king, on the treaſurer's returning the price of the ſalt, that was expended on the fiſh ſo tythed, to the fiſhermen. When the ſame edict came out on the 17th of July of the ſame year, thoſe were exempted from the obligation of the tythe, who exerciſe the buſineſs in ſmaller boats, or for the ſake of domeſtic ſupport alone.

The people, as uſual, requiring a certain return or bounty out of the tythes they paid, commonly called *Tiende Kande*, and the petition being judged and rejected by the governor of the diſtrict, the king, by an edict, dated 8th of February 1639, moſt humanely tranſmitted the complaints and requeſts of the people to the lawful deciſion of the juridical aſſembly. All matters then appertaining to this queſtion, duly and agreeably to law being conſidered and diſcuſſed, a ſentence was paſſed in the public aſſembly held in 1650, by the judge; by which a certain meaſure of beer was adjudged for every hundred weight of tythed fiſh. In the juridical aſſembly held in 1653, in Wardoe, it was determined by the judge, that of 120 fiſh ten ſhould be paid as tythe; of which, in the place of the ſaid *Tiende Kande*, that is, a decimal meaſure, three pounds were to be returned to the perſon who paid the tythes.

With reſpect of perſons receiving tythes, and alſo of the time and place when and where they were to be paid, it was determined in the juridical aſſembly, in the year 1661, that tithes, which hitherto were paid at no ſtated times, and only in ſmall portions, as the parties willed, ſhould henceforth be paid at a ſtated time yearly, namely, at the time of king Canute the Martyr, and on the feſtival of All Saints, and alſo ſhould be collected in greater ſums.

But as with reſpect to tythes, other greater difficulties might yet ariſe, and really had ariſen, a new decree from royal authority was publiſhed in 1685, on this buſineſs, containing many regulations, in which tything, with reſpect as well of perſons as of places and things, was moſt juſtly arranged and decided on; but it was ſpecially determined, that when tythes were to be paid, leſt any fraud ſhould be committed on the part of the perſon who paid, the paſtor of the place, certain men in office, as alſo ſome ſelected and ſworn from the people themſelves ſhould be preſent.

Chriſtian the V., of glorious memory, at length put an end to this whole buſineſs by a decree of April 2, 1687, in which it was conſtituted and commanded, that from every hundred of fiſh, ten ſhould be contributed, the decimal meaſure (*Tiende Kande*), above-mentioned being laid aſide. Beſides, that the decimation ſhould be made in the very place where the fiſhes are put on board, for the purpoſe of dividing them into three equal parts, between the king, the church, and the clergyman. For which buſineſs it was expreſsly given in command to the governor of the diſtrict by his ſacred majeſty, on the 9th of April of the ſame year, that an exact account ſhould be taken of the fiſh put on board, as alſo the tons of oil, called by the natives *Tran*, according to weight and meaſure, and that he ſhould exact from every ſeaman an account of the ſame, that when an eſtimate was made of the tenths, a certain rule of tithing might be made. Tythes having paſſed through various regulations and modifications were at laſt, by ſeveral decrees, brought to a fixed and ſettled rule.

CHAP.

CHAP. XIV.—*Of the Workmanſhip of the Laplanders.*

IT belongs to the women in Lapland to dreſs ſkins of various animals, ſuch as foxes, young rein-deer, otters, and other ſkins, ſcraping off a membrane that goes round ſkins of this kind, with a certain iron inſtrument, which they call *Jekko*, they thoroughly oil the ſkin, with oil from the liver of fiſh, and by means of a certain iron, which is ſharp and not unlike a ſickle, and faſtened to the wall of the habitation, they cut it by moving it up and down. An inſtrument of this kind is called in Lapland *Spierko*. The fibres cut out of the feet of the rein-deer, they bake, and when done they beat and pound it into various ſmall pieces, until they attain the ſoftneſs of wool, and when done by rubbing them with the palm of the hand to the cheek, twiſt them into very ſmall threads. They curiouſly embelliſh the belts and head-pieces, with which they uſually adorn their rein-deer of carriage, purſes and the borders of garments with filaments of tin. The manner they uſe in the making of elegant works of this ſort, is curious and much uſed by the Laplanders in common; though there are not wanting among them women to know and carry this art to greater perfection.

They are acquainted with the art of dying cloth of a yellow and ſaffron colour, by means of certain herbs, called *Idne* and *Livdnjo*. From various party-coloured threads they make knots, whence thongs are afterwards made with an inſtrument adapted to this purpoſe from the rein-deer's horn, called in Lapland *Njijkom*. On this ſee more in Chapter IV., on the garments of the Laplanders.

From the unſhorn, but cleaned ſkins of ſheep, they make coverlets, ſome of which are in the ſhape of a ſack, in which the feet of the perſon who repoſes can be put; others are differently formed. On theſe ſee Chapter VI., on the beds and couches of the Laplanders. The ſaid coverlets when laid on a bed are turned with the hairy ſide to the body of the perſon who uſes them.

They weave alſo ſheeting, which is ſo worked, that after it has been in uſe a little time in covering them, when the bed becomes worn, it is converted to the uſe of covering for the winter's hut. A great number of theſe is wove from thick white thread, with dark fringes of black or aſh-colour. The loom in which are woven the ſaid ſheets is made from out of two thick beams raiſed an end, on the extremity of which is fixed a looſe weaver's beam, extended from the one column to the other: to this they faſten the upper end of the thread, which comes down from the weaving beam ſtraight to the ground; and as the thread is neither thrown with a ſhuttle, nor preſſed together, but worked with the hand whilſt it is knocked together with a little beetle on coming back, the other part of the thread is brought together by the flat part of the hand, ſo that a ſpace ſhould be open for putting in the hand, through the little fork, which is ſuſtained from the ends of the two little arms that project out from the columns. Hence it falls firſt obliquely before it gets directly down. To the lower extremity of the woof are faſtened ſtones, leſt looſened, it may entangle the body of the thread, but by being kept ſtiff and extended by its weight, it ſhould preſerve the whole together. The woof is thus conveyed, and in the above manner, firſt to the upper part of the beam, and is woven with the hand, whence it is clear that in making ſheeting or covering, one muſt begin from the upper end. As weavers cover round, in a weaving machine the beam at the end, gradually with linen by turning it round, ſo alſo the beam of the aforeſaid weaving machine, is gradually covered over, while turning with the ſtuff that is made. They weave gloves from the wool of ſheep, mixed with that of hares. This is the manufacture of the women alone.

The

The men are acquainted with the manufacture of cups, plates, of various kinds for various uſes, ſome of which contain a quarter of a ton, ſerving for the purpoſe of keeping the milk of rein-deer, from the wood of birch-knots, not unlike to the maple tree. From the plates of horn which project from the end of the horns of the rein-deer they form ſpoons, from their own fancy, yet artificial enough. The aforeſaid plates, ſome more, ſome leſs, contain a certain marrow of an aſh-colour, thoſe that contain the leaſt are the ſmoother, more beautiful and fitter for uſe. On utenſils of this kind, may be ſeen, variety of forms, repreſentations of flowers of a dark colour, interſperſed, made with charcoal, enchaſed and inlaid. Thoſe which are in compariſon of others, a little more elegantly formed, and figured, are ſometimes ſent into cities to goldſmiths that ſilver ſpoons may be made to their form.

They have acquired the art of fabricating the handles of knives, artficially adorned with tin, as alſo the heads of ſticks from the thicker part of the rein-deer's horn. They form oval caſes with great attention to neatneſs. Little flaggons are made from the ſmall roots of trees, or from thoſe called *Taeger*, which they cloſe together in a ſingular manner. The ſhape of a big bellied veſſel was uſually added to a round flaggon with a ſhort neck, and ſerved for keeping ſalt. They are ſkilled ſufficiently in the conſtruction of ſledges of various uſe and form, and diſtinguiſhed by various names, as *Giet-Kierres*, *Raido Kierres*, *Lok-Kierres*, *Pulke*. On ſledges, ſee Chapter X., on the machines of conveyance among the Laplanders. They get glue from the ſkins of fiſh, by boiling eſpecially that part which covers the head; they get it alſo from the horns of the rein-deer, far more excellent than the former; the ſkin lies boiling for a long time in hot water, from which when taken out, whatever remains thickened at the bottom is made into glue.

They do not uſe tongs when forging iron, but in the place of them a certain wooden inſtrument called in Lapland *Aaſſer*. The Laplanders as well as the Norwegians, inhabitants of Finmark, called by our countrymen, *Nordmoend*, buy Nordland boats, yet ſome of the Laplanders themſelves make them as well for their own uſe, as for the uſe of others. Theſe belong to the marine affairs.

CHAP. XV.—*On the various Manners of the Laplanders.*

THE Laplanders, from the time of Saxo, who flouriſhed about the year 1190, and therefore not as yet known by this name, for ſix whole ages, called before that time *Skrit Fins*, uſe various manners peculiar to themſelves.

It is a cuſtom received among the eaſtern nations, to preſent each other with gifts, eſpecially ſuperiors. The ſame obtains among the Laplanders. For coming into the preſence of the magiſtrate, the clergyman, or conſul, they each bring ſomething with them; a cheeſe, a hare, a ptarmigan, ſalt or freſh water fiſh, a killed lamb, veniſon of rein-deer, the tongue of the ſame, a round lump of butter, a quantity of down-feathers, and other preſents of ſuch nature. Neither is the gift received, without a due return; for they are preſented with a piece of tobacco, a glaſs of water and honey, a pot of beer, a little pepper and ginger, and other little things at hand, and which we find to be very acceptable to them. The ſame cuſtom is to be found among the Ruſſians, for on their arrival in any place, they diſtinguiſh him, who is in any degree of dignity, and whom they hold in honour, by a preſent which uſually conſiſts in brown bread made in a cake, which is brought on a wooden trencher, coloured red, in certain wooden ſpoons, coloured with a reſinous matter from the juniper tree, or gilt ornaments, ſometimes in hen's eggs, ſalt ſalmon, linen, and ſuch like things.

That

That they ſhould diſtinguiſh the ſeaſons, and feſtivals, and other periods of time, the Laplanders formerly made uſe of certain wooden calendars commonly called *Priimſtave*.

The huſband frequently diſcharges the duty of the midwife.

The Laplanders very often take the clergyman of the place, the miſſionary, the public inſtructor, and church-warden, as witneſſes of the baptiſm of their infants.

As often as the occaſion demands that the whole family, who inhabit the cot, ſhould go out, either to look after the rein-deer, that is loſt, or to attend to any other buſineſs they tie the children, who by reaſon of their tender age, cannot follow, for their better ſecurity, in the cot, leſt they ſhould fall into ſome miſchief or the fire when left to themſelves. When going over the mountains I uſually carried with me, among other baggage, a trunk made faſt and ſecured, to which they often tied the children, leſt they ſhould too freely run up and down.

There is no uſe made of ſtools among this people; for the Laplander ſits on the ground with his feet acroſs under his ſeat. Should he happen to viſit other inhabitants of Norway, in whoſe habitations there is either a ſtool or benches, he refuſes to uſe one when offered to him, thinking he can ſit more commodiouſly on the bare ground.

The Laplanders, ſaluting each other, ruſh into each others arms in mutual ſalutation, repeating *Buuriſt*, that is God ſave you, by this form the little Laplanders, ſaluted me alſo, taking me for a native, on account of the language and habit of Lapland, which during my reſidence among them, I always uſed.

The Lapland women ſhave their heads even to baldneſs. They kill the vermin that infeſt the head with a knife.

Should the foot or arm be in extreme pain, they bind that part of the limb where the force of the pain principally is felt, with two ligaments, as tight as they can, and apply to it a burning hot coal, under a perſuaſion that the pain, as if getting an opportunity from the burſting and opening of the fleſh by the force of fire, would break out and go awa .

In the whole tract of weſtern Finmark, for I reſided there for a whole ten years, two horſes were only to be found, one of which belonged to Peter And, the provincial judge; the other was the property of Chriſtian And, prefect of merchandiſe in the pariſh of Alten. Hence the peaſants of the Norwegian nation, who inhabit this tract, as alſo the maritime Laplanders, are compelled of themſelves to diſcharge the labour of horſes, by carrying hay on their backs in ſummer, in winter in little carts, and ſuch things, as elſewhere are carried by horſes. The condition of the mountain Laplanders, is, on this account, the more deſirable as abounding in rein-deer, and who make uſe of their aſſiſtance for their own purpoſes, and for the carrying of burthens. And on account of the great ſcarcity of horſes, all over this part of the country, moſt of the inhabitants look with aſtoniſhment at this animal, as they do at any thing foreign and very ſtrange. One Matthias Peterſon furniſhes an inſtance of this: he was a mountain Laplander from Porſanger Bay, who, as he told me himſelf, came to And, the judge of the place, for the purpoſe of adjuſting ſome buſineſs; in his houſe he uſed to ſleep, when happening one night to come out from his bed-room, he unexpectedly ſaw a horſe ſtanding at the door, at the ſight of which he was as terrified, as if he had ſeen a huge ſpectre: he haſtily returned to his chamber, where he ſhut himſelf cloſe up, after well ſecuring the door.

And as it is well known, in this tract of country there is neither ſowing, nor harveſt, ſo does it neceſſarily follow, the inhabitants want no manure. Hence the dung that is gathered from cows, ſheep, goats, as being in itſelf a thing of no value, they uſually on the approach of ſummer, are wont to burn. But certain ruſtics of Finland, who live on

the river Alten, accuſtomed to agriculture at home, cultivate a few acres of ground, whence they have, on ſome years, no deſpicable crop.

It is the cuſtom of certain Laplanders, whoſe condition is ſuperior to the reſt, to bury their wealth, eſpecially money, ſo cautiouſly in the ground, that their heirs ſhould not have the leaſt hope of enjoying it. That theſe people ſhould do ſo I am not ſurpriſed, if having no lockers, no incloſures to ſecure it, and where in ſafety, and without the fear of thieves, they could lay up what treaſures they have; but for the maritime Laplander, who has but his hut, and the mountain Laplander but his cot, which he puts up and takes down according to the ſeaſon, I confeſs that the reaſon altogether eſcapes me, why at the hour of death he does not chooſe to tell where he has hidden his riches, that the heirs ſhould convert them to their uſe after the death of their parents. It has been related that a certain very rich Laplander, of the name of Henry Jonſon, living in Ozejok, being aſked the reaſon when near his death, why he ſo ſtudiouſly concealed his riches, that his ſurvivors ſhould have no hope of finding them? his anſwer was, that unleſs he did ſo, that he would ſtand in need of the neceſſary means of ſupporting himſelf after death.

They ſuſpend dogs for the purpoſe of killing them from a tree, and when ſtrangled, take their ſkins, from which, if they are black, they make borders and fillets, to be ſewn on garments and gloves.

It is a cuſtom with the Lapland peaſants of the Findland people, ſome of whom dwell on the river Alten, to waſh themſelves often with warm water, and to ſprinkle themſelves with water tinged with the boughs of trees.

And this is enough for the preſent on the manners of the nation. To thoſe who wiſh to know more on this ſubject, I refer them to the various Chapters of this Book, where theſe things are expreſsly treated of.

CHAP. XVI.—*Of the Marriages of the Laplanders.*

IT very ſeldom happens that a young man of the Norwegian provinces marries a Lapland young woman, and a young Laplander a Norwegian young woman: in the diſtrict I have been miſſionary in, this never happened while I was engaged in the holy office.

The Laplander, when going to pay his addreſſes to the girl, takes certain of his relatives united in the next degree to him, one of whom is to be his advocate with the lady for him: the lover provides for himſelf brandy, to drink to the health of his future ſpouſe, and her parents and friends; beſides, he brings a ſmall preſent for the lady herſelf, which is a ſilver belt, a ring, or other things of this kind, as his ability can furniſh. When they come to the houſe in which the lady lives, all come in except the lover, who ſtays out until invited in. When all are within, the advocate of the young man offers a cup of ſpirits to the father, which if he refuſes, it is a ſign that he rejects the terms; but if he accepts it and drinks, that the nuptial condition is not diſpleaſing to him. Then the above-named advocate drinks to the health not only of the father and mother, but of the future ſpouſe, and her friends who are preſent; which drinking bout goes on ſtep by ſtep, with a requeſt of courtſhip. This prelude being cloſed, he approaches the buſineſs a little nearer, and courts her under the ſhape of a lover concealing it yet from the eyes of the world: he now draws out his long formal phraſes, eſpecially thoſe of the fineſt quality. Some time after the lover himſelf is introduced, and placed in a ſpace which is inſide the door between the two birchen ſtocks that lie on the floor, and of which we made mention in Chapter V. If he obtains the conſent of the girl, and of her parents and friends, he gives the preſent which he

he has brought, called *Gilhe*, to her, and promiſes new cloaths to her parents as a preſent, which the Laplanders call *Biejatas*. When this buſineſs is completed, the lover, bidding good-bye, departs with his friends. All theſe ceremonies in the buſineſs of courtſhip, as deſcribed, are in uſe, though not always every where, and by all, eſpecially at this day, with the exception of one or two ſometimes. If the parents have betrothed their daughter to a lover, but afterwards broke their faith, they muſt make good the expences contracted on the nuptials as far as they proceeded, according to a regulation among the Laplanders; ſo that not only he ſhould receive the fortune and odd-money, but the expence alſo made in brandy, ſhould be reſtored to him. During the eſpouſals between two who have pledged their mutual faith to each other, yet going on, the bride viſits ſometimes the bridegroom: on a journey undertaken for the purpoſe of meeting her, he delights himſelf by ſinging her praiſes; to this purpoſe he throws out ſuch expreſſions as preſent themſelves unpremeditated to his thoughts, and ſuch as his poetic vein may furniſh to him. But this cuſtom, that of a lover viſiting his miſtreſs, and celebrating her in ſong, is not obſerved at this day by all. When they have met at the appointed place, and come into her preſence, he preſents her with brandy, and a little tobacco, if agreeable to her: ſhe is clothed in that neat nuptial garment, uſually for ornament, which is in uſe among the Lapland women on feſtival days, with this only exception, that whilſt women, married as well as unmarried, at other times almoſt go with their head covered, ſhe only wears bare curls of hair, which are bound up with party-coloured fillets; yet, if my memory does not deceive me, in certain parts of Finmark a girl on the nuptial-day wears fillets, between which and the common fillets that bind the hair of the Lapland women there is no difference. When the nuptial ceremony is finiſhed, the wedding-day is celebrated with frugality; the nuptial gueſts of better fortunes honour the fair bride with ſome preſent, ſome with money, others with rein-deer ſkins, and ſuch like things. The nuptials are thus celebrated without any pomp or oſtentation.

Among the people of Alten, among whom I diſcharged the duties of public inſtructor, they were celebrated in the following manner: when the union was completed, the bridegroom with his ſpouſe, and a few of his relations, withdrew to the ſolicitor of Talvig, whoſe houſe was adjoining to the church, where (he is called in Norwegian *Bonde Lehnſmand*) alſo is held a yearly meeting of the juridical aſſembly by the governor. Hither the gueſts being invited, were received at a nuptial feaſt prepared at the expence of the huſband. The diſhes that were prepared were few and ſimple, namely, roaſt mutton, with a ſmall portion of water and honey, which when taken, the new-married pair and the gueſts retired to their own houſes. I myſelf, by invitation, was preſent at a nuptial entertainment given by one of theſe Laplanders, celebrating the nuptials of his ſon, where there were no delicacies, nor any thing laid but the above-named diſhes. The ſordid gueſts, accuſtomed to no luxuries, were ſo ſatisfied with the bare pottage put before them, that without doubt they would have forgot the roaſt meat, had not the father of the bride, noticing this, called out loudly, 'Roaſt meat, roaſt meat! put it before us,' and this placed before them, he himſelf carved, yet in ſuch a manner, as openly to diſcover his ignorance in the art of carving.

The nuptial preparations which are in the pariſh of Kielvig, at the bay of Porſanger, in weſtern Finmark, are yet more ſimple and frugal. After the uſual union, the married pair, with a few of their friends, withdraw to certain ſmall huts, ſcattered in the field at no great diſtance from the church of Kiſtrand, to eat a ſheep which is brought for this purpoſe. When this is eat the company breaks up, and the married pair and their friends return ſtraight home.

From the nuptials and banquets of the Laplanders every kind of entertainment, the dance, and ſports of ſuch a kind, incitements to ill, unknown to theſe people, are baniſhed: and hence neither morrice-dancers, pipers, nor even an inſtrument of muſic, is to be found among them.

And as they are altogether unacquainted with inſtrumental muſic, ſo are they equally ignorant of vocal, and not only ignorant, but invincibly ſo: for during the intervals that I had leiſure I tried their docility, which after various experiments I found ſo great, and to ſpeak as it really is, none at all, that they were incapable of learning the very rudiments of the meaſures of the pſalms, or of adapting them to any harmony The cauſe of this evil is not in the Laplanders themſelves, but is inherent in the very character and genius of their language; for the Laplanders bring out moſt words, and each ſyllable of the word, and the pauſes with the acute accent,; and hence it happens that either ſpeaking or ſinging in Norwegian, they encumber all the words and ſyllables of their ſpeech with one and the ſame accent, and thereby utter a hiſſing and altogether confuſed ſound. And this is the reaſon that the modulation of the Laplanders is more like to an indigeſted kind of clamour or howling, than to any thing like ſinging.

When the nuptial feſtival is over, the bridegroom often ſtays with his father-in-law for the ſpace of a whole year, which when ended, he is diſmiſſed with his wife, to find a habitation. Before his departure, if circumſtances admit of it, he preſents him with rein-deer, with kettles, with pots, furniture for beds, and other domeſtic utenſils.

CHAP. XVII.—*On the Holidays and Amuſements of the Laplanders, and various Stories, partly entertaining, yet true.*

THAT feſtival-holidays, as they are called, are uſually inſtituted and kept during the Nativity of the Saviour, the Laplanders are altogether ignorant.

Some, but a few, among them play at cards, and that very ſeldom.

They contend among each other who can moſt exactly hit a mark. They mark the target, on a white ground, with a black; on a black ground, with a white ſpot. He who beſt hits the mark is preſented with money, tobacco, and whatever is agreed upon.

They play at ball in this manner: part ſtand on this ſide, part on that oppoſite to them; then one on one ſide lets off the ball, covered with leather and ſtuffed with ſtraw, cloth, and other rags, which his next man throws up in the air with a ſtick or battledore, and then one from the oppoſite number ſprings forward to catch it before it falls to the ground; when at the very ſame time he who ſtruck it up in the air runs to the oppoſite ſide to take the place of him who came from it to catch the ball. If he who aimed at the ball lays hold of it, and with it ſhall hit him who is ſtriving to reſume his place before he has reached it, he is the conqueror.

A certain kind of amuſement, called the Gooſe (*Gaaſe-ſpil*), is in practice among them. On a tablet are drawn certain lines, on which they move up and down counters, to the number of thirteen, to deſignate ſo many geeſe; one of theſe, a thief, repreſenting the fox lying in wait for the geeſe on the oppoſite ſide of the board. In this game there are two, as it were, champions ready for fight: the one leads on the chefs-man, that is, the fox; the other manages the geeſe. He who is fox does every thing to way-lay and take the geeſe, which if he ſucceeds in he comes off conqueror; the other, who undertakes to defend them, ſtretches the whole force of his genius to avoid cautiouſly the ſnares of the wily fox, and when the enemy is on all ſides ſurrounded by the geeſe, and reduced to an extremity, he carries off the victory.

As

As a paſtime this exerciſe is received among them: two men hold a ſtick raiſed above the ground no great diſtance, a third on a ſtaff flies up to them, and when he has come as near as poſſible to them, ſupported on the ſtaff, he ſprings over the barrier.

The Laplanders are great wreſtlers, this exerciſe they uſe partly for amuſement, partly for keeping off the cold. I have been an eye-witneſs more than once of this kind of exerciſe, eſpecially on journeys which I had to make in their company over the mountains. It then frequently happened that, when the rein deer ſtopped and fed on the moſs that grew under the ſnow, their drivers in amuſement would repel the force of the cold from them by wreſtling.

Two men hold a rope extended on two ſticks at a ſmall diſtance aſunder; one of theſe holds with each hand on one ſide, both of the ends of the one ſtick; the other, on the other ſide, does exactly the ſame. Each then ſtrives with his whole force to take the ſtick from the other, and that he ſhould the more eaſily maſter his wiſh, he has one or more friends at hand behind him, who aſſiſt him by plying their ſhoulders to his exertions. Whoever of theſe twiſts the ſtick from the other, carries off the prize, and yields to him what has been agreed upon between them.

They put two ſticks into a ball of thread and lay hold of them when in, and in oppoſition to each other, each drags with all his might to himſelf until the ball is broken up in their wreſtling. This exerciſe, which they call *Bolokiit Kiaeſſet*, is made as a trial of ſtrength, to aſcertain which is ſtronger than the other.

An exerciſe has been received among the Laplanders, that two men ſtanding oppoſite to each other, the one putting his hand on the girdle of the other in order to ſupplant him, ſhould try their ſtrength. He that overſets the other is the conqueror.

The young men play by throwing ſticks with amazing agility from hand to hand; this kind of amuſement is called in Lapland *Baettom*.

They even ſuffer themſelves, after the manner of rein-deer, to be girt and driven for amuſement.

Here I ſhall aſk pardon of the benevolent reader for mentioning certain incidents which befel me and others; theſe are of no great moment, yet, as being uncommon and not known, I ſhall mention them.

I paid a viſit on a certain time to the clergyman of the living of Koudekein, John Junell. That venerable man received me with all imaginable politeneſs, laying before me what he had at hand, namely, broth made from freſh rein-deer, fiſh freſh from the river, and, what you may perhaps be ſurpriſed at, rein-deer cheeſe, boiled whole in a pot, ſprinkled with much ſugar, and placed on a plate in the manner of a tart. But of this clergyman this is remarkable, he being the whole ſummer almoſt deſtitute of cattle; as it appears, that almoſt all the Laplanders who make up that church, in the pariſhes of Skiervoe and Carlſoe, ſituated in the parts of Norland, are accuſtomed to emigrate in the ſummer ſeaſon to the coaſts.

It happened, when on the Chriſtmas-eve I was lodged in a certain houſe appointed for receiving the clergyman, going to do duty on the next feſtival in the church of Kiſtrand, built at the firſt time of the miſſion, that a ſmall portion of freſh milk was given me as a preſent. From this I was inclined to make ſome frumety, but was exceedingly diſappointed; for the cook to whom I had given this in charge, mingled ſuch a quantity of ſalt in this gruel for me, ſo imprudently, that I was little inclined to taſte it, much leſs to eat the whole of the meſs. The man did it in the ſimplicity of his mind, but he was attentive even to a fault. Meantime I went to bed, having nothing at hand to appeaſe a hungry appetite with.

During

During the whole time I was among the Laplanders it always was a duty with me, from the feſtival of the new year, to that time which is between Eaſter and Whitſuntide, to traverſe the mountains in the diſcharge of the duty of a preacher, firſt among the mountain Laplanders of Porſanger bay, then among thoſe who inhabit Laxfiord bay. When I performed this troubleſome journey, and was preparing to deſcend again to the bay of Laxfiord, to initiate the maritime Laplanders of this place alſo, it happend, that the Laplander I firſt came to (his name was Oluff Erichſen Karſnes,) preſented me with a ſmall portion of cow's milk, which was freſh, from which I had a mind to make a ptiſan, to be divided into two equal parts, one for myſelf, the other for the hoſt. How great my deſire was for it may be inferred from my not either ſeeing or taſting a drop of new milk for the whole of the winter. But ſince in this as in other huts, the ſheep occupied a ſmall place for themſelves, and that ſheepfold was next to me, it ſo happened, that the ſheep, allured by the ſmell of the freſh milk, jumped through the door, which the Laplander's wife had opened, and overturned my bowl of drink. The hoſt, who had the half of it, had that politeneſs that he wiſhed to repair my loſs by kindly giving me part of his own, which I refuſed with equal politeneſs, knowing that ptiſan was as grateful to him as new milk was to me.

When going a journey over the mountains, among other veſſels for travelling, I carried with me a liquor caſe filled with brandy, with this intent, that, when ſeized with cold, I ſhould have the means of reſtoration. But neither did this ſucceed to my wiſhes. For, when walking out in the wood, not far from the cot, the wife of the Laplander where I reſided went out to fetch ſome calf-ſkins from the ſtorehouſe near the cot. It ſo happened, that, whilſt ſhe was taking down the ſkins, the liquor caſe, which lay upon them, fell to the ground and was broke in pieces; the brandy alſo all flowed out on the ſnow. The maſter of the cot, by name Juks Anodſten, on ſcenting the brandy, eagerly fled to it, and, ſucking up the very ſnow which had abſorbed the liquor, drank till he was even drunk. On my return from the wood, I found him in a ſtate of inebriation, which excited in me the greater wonder, as I knew the great penury or ſcarcity of brandy or any ſtrong drink that was in this deſert. I felt uneaſy too, as the king's mandate had forbidden, under ſevere penalties, the giving a drop of ſtrong intoxicating liquor to any Laplander whatever. The Laplander then ingenuouſly confeſſed the fact to me on my coming home, in the following words: *Odne ednak vahag læ ſhiaddam*; that is, a great misfortune has happened this day! At which I was much moved, fearing leſt ſome ill had befallen his family; but, informed of the misfortune, the weight of which he had ſo aggravated with words, I collected myſelf, having little regard for the liquor caſe, which I never had before nor afterwards on my journey. The whole time I was among the Laplanders I drank nothing but cold water, which was more grateful and delicious to me than any wine or any other liquor whatever. And whenever among the clergy, or men of better condition in life, where beer was drunk, I found the thirſt was rather excited than quenched by it, certainly that it could not be allayed without water from the ſpring. But now for my hoſt, who, as he was a man in good circumſtances, ſo was he alſo a man of courteſy, and made me a full reſtitution of almoſt the whole I had loſt.

A certain merchant of Bergen, by name Daniel Ravnſberg, of the ſociety who purchaſed the Finmark trade from the king, came into Finmark while I was diſcharging the duties of my miſſion there, in order to attend to ſome buſineſs he had the diſpatch of. I travelled with him from Porſanger bay, where he had ſome little delay. On the voyage the ſeamen killed an otter, and made for ſhore as uſual to dreſs it. When dreſſed, and eat up greedily in our preſence, Ravnſberg aſked a taſte of the boiled part,

which had ſo much recommended itſelf by its whiteneſs. When he had taſted it, and found no illneſs from it, following the example of my aſſociate, I ate likewiſe myſelf a ſmall part without the leaſt injury, and found the fleſh of this animal, with the exception of the fiſhy flavour, ſufficiently delicate.

A certain Laplander reſided at Porſanger bay, by name Simon Kiaes, ſo notorious for magic; his fame is yet among his countrymen, and will endure, I think, for ever. His ſon Simon Peter was in the family of the illuſtrious Knagenhielm, counſellor of ſtate, and judge of the territory of Bergen. This Simon had once come into the village of Kielvig, which the governor of weſtern Finmark, Trude Nittér, then preſided over. The governor was then drinking a cup of tea, but handed to his gueſt one mingled with much ſalt in the place of ſugar, which he politely received, and artfully concealing his indignation withdrew. After ſome time the governor came accidentally to the houſe of the ſaid Laplander. And as in that part of the country where our Simon lived there grew no ſmall quantity of Norwegian blackberries, the governor aſked for a quantity of the berries, if convenient to him. The Laplander obeyed, bringing the berries reſpectfully, but ſprinkled with ſuch a quantity of ſalt as to yield a moſt ungrateful taſte. The governor, on taſting the berries, diſguſting, from their bad taſte, reproved the Laplander in ſevere terms, reproaching him ſeriouſly, that the berries, good of themſelves, were ſpoiled by his ſprinkling them with too much ſalt, by which they had loſt their natural flavour. The Laplander's excuſe was ſmart, that he thought his highneſs muſt be exceedingly fond of ſaltneſs, as he had put into the tea which he had given him to drink, ſuch an abundance of ſalt in the place of ſugar.

Another Laplander of the ſame place, was aſked by way of joke, by a ſailor of Bergen, whether he could let out the hell fly, or play ſuch other helliſh tricks, anſwered, that he would immediately. He no ſooner ſaid ſo, than he brandiſhed a burning log of wood, ſnatched from the fire, all over the houſe in which they were, running up and down like a maniac; that the ſailor, fearing leſt he ſhould be burnt from the ſparks, fled inſtantly with his friends, ceaſing to teaze the Laplander any further.

That the Laplanders are eaſily alarmed and terrified, on the apprehenſion of danger or war, the following is an inſtance. At the bay of Laxfiord is a place called Laeſbeſby. A Laplander's wife who lives there, went out one day to bring home her ſheep who were at paſture. It happened on that day, there was a great fall of ſnow that covered the face of things, ſo that the woman ſcarcely could diſtinguiſh one object from another, and took the parts of the trees that roſe above the ſnow for men; and as it is the nature of perſons in fear, to faſhion to their imaginations what they moſt dread, ſhe fancied that theſe men moved and came near to her. Seduced by theſe phantoms and out of her ſenſes, ſhe had no longer doubt but they were Ruſſians coming on for plunder and booty. Without a moments delay ſhe returned home and filled all places with terror. Credit was given to her report. There happened at this very time to be no ſmall number of perſons aſſembled, for the purpoſe of divine worſhip. On this ſorrowful news, all are armed for defence; fires are lighted up through the plains; guns let off, and yells raiſed, that the enemy, deceived by ſigns ſuch as theſe that conveyed the idea of numbers, ſhould in alarm run off. At the approach of night three young men were diſpatched as ſcouts, to explore and report; theſe delaying beyond the uſual time are ſucceeded by three others, who return and report that the enemy is coming up. In this general trepidation each prepares for fight. One from this brave cohort ſnatches up, for his gloves, which the pinching cold, and the ardor of the action

ſeemed,

ſeemed, forſooth, to require, a pair of breeches, which lay in his way. And now the whole is drawn out, ſome armed with muſkets, others with hatchets, and ſome had bills. A woman of the troop I converſed with on this imaginary fray, had a child on one arm, and a bill hook in the other. And as the numbers thickened through conſternation, ignorant of the way, and confuſed by the darkneſs of the night, on their march they miſtook the path, and fell, fortunately without any harm, into a pit-fall, and when extricated by the next morning exhibited a ſtriking and ridiculous ſpectacle of the effects of fear on the imagiation.

A Laplander of Alten in weſtern Finmark, whoſe name was Peter Nelſon, wagered with a ſailor of Bergen, that he would hit with a grooved gun, ſtanding in the hatches of the veſſel, the top of the maſt with exactneſs; and performed his engagement.

CHAP. XVIII.—*On the Diſeaſes and Deaths of the Laplanders.*

THE ſmall pox, a terrible and contagious kind of diſeaſe, is ſeldom in Finmark, and ſcarcely once makes its attack within thirty or forty years. Some years back this diſorder raged in theſe countries with ſuch malignity, as to carry off an incalculable number of every age and ſex. A young Scotchman, brought it to Bergen whence, the contagion ſpreading extenſively, as it uſually does, ſcattered itſelf about in all quarters, and tainted with its venom certain perſons, reſiding at Bergen on buſineſs, during the ſummer, from the extremity of Nordland. But from the nature and effects of this diſeaſe, epidemically ſpreading itſelf, we may know in part, and eſtimate the inſcrutible ways and methods by which the Divine juſtice proceeds to vindicate itſelf. And as it is cuſtomary among the Norwegians peaſants, to count their years, from the laſt war between the Danes and Swedes, ſo are the Laplanders accuſtomed to count from the time of this raging malady, reckoning in this manner uſually: "I am ſo many years of age from the laſt viſitation of the ſmall pox."

The Laplanders are afflicted at times with the head-ache, and a few other common illneſſes, in other reſpects, they are a ſound and robuſt people.

They get rid of internal diſeaſes, as they call them, by drinking ſeal's blood, yet tepid or the blood of the rein-deer. They cure the tooth-ache, elſewhere, a moſt ſharp and almoſt incurable pain, in like manner by a draught of ſeal's blood. Formerly, and in times of ignorance, they thought of no remedy againſt this more immediate than the rubbing the teeth with a ſtake from a tree ſtruck with lightning. Beſides an unuſual ſpecies of tooth-ache prevails among the Laplanders, if you look eſpecially to the cauſe of it ariſing from the bite of a certain kind of worm of a yellowiſh colour, with a black head, as large as a grain of barley, which gets into the teeth of the Laplanders, and gnaws them with the acuteſt pain.

They uſually cure the eyes, darkened by a film drawn over them, by putting in a ſmall vermin, the louſe, to eat through the membrane by its ſubtle rubbing. Delicacy would have prevented my mentioning this kind of cure, but as it is ſo uncommon and unuſual, that it may be ſought for in vain, among the medical tribe, you will indulge me in the bare mentioning it. For a kibe on the heel, and other ills contracted from extreme cold, they uſe oil of rein-deer, with which they rub over the part affected. They ſoften the ſores of wounds by gum from the fir tree. I have known ſome Laplanders, who, on fracturing a limb, before they would reſtore the limb, put out of joint and bruiſed, by bandaging it up when ſet right, to have drunk ſilver, or if they had none, braſs when pulverized, affirming ſolemnly that they had received no ſmall relief from the uſe of this potable metal.

How they expel pain from the foot or arm, by the means of a hot burning application, has been ſhewn before.

The nerve which is extended through the hinder feet of the rein-deer to the hoofs, ſerves for the purpoſe of binding up the nerves and other parts bruiſed, and put out of joint, and of reſtoring them to their former ſtate and place, with this difference, that thoſe of the female ſerve for the men, thoſe of the male for the women.

The body of a Laplander, when dead, is placed naked on a bier on ſome ſhavings. The funeral, conducted with little ceremony, accompanied by a very few of his friends is conducted to the place of interment. The ſurviving relatives, if in circumſtances, receive the attendants at a ſupper ſerved up in the ſimpleſt manner, the whole conſiſting of a ſmall portion of water and honey, &c. It was of old a cuſtom in this country, that thoſe who were diſtinguiſhed for their ſkill in the bow, or the gun, ſhould be buried in places conſecrated to the worſhip of their idols, others being interred in the wild ways, and ſuch ignoble places. The ſepulchre itſelf had no other ornament than a common ſledge, called in Lapland *Kierres*, in the place of a monument. It was a cuſtom too in time paſt, to lay on the body, the outward bark of the birch tree, which the Norwegians call, *Naever*, and uſe in the place of laths, covered with heaps of ſtones gathered and raiſed up for this purpoſe. The tomb itſelf, adapted to the body, conſiſted of ſmooth and oblong ſtones, raiſed and put in order on each ſide, with a top and bottom made of ſtones of the ſame ſort and form, and not unlike altogether the common biers in uſe among us. In the funerals of the ruſtic Laplanders inhabiting Finmark Proper, this ſingular cuſtom is obſerved that the end of the ſepulchral linen, while the proceſſion is moving, for greater ſolemnity and ornament, projects a little from the bier.

Among the manners peculiar to this people it is here deſerving of notice, that the Laplanders uſually make a preſent to their children when born, of a female rein-deer, commonly called *Simle*, on the condition, that the boy ſhould poſſeſs it with all its progeny, in future and thereby become in proceſs of time the lord of no ſmall herd. When either parent dies, the boy demands, receives, and retains as his legitimate poſſeſſion due to him by juſt title, the ſaid animal with all its produce, ſeparated from the partition of the effects that may be made by the other heirs of the effects of the deceaſed.

CHAP. XIX.—*Of the Gods of the Laplanders.*

THE Laplanders formerly faſhioned to themſelves various gods, inhabitants of the mountains, lakes, and other places; whence their frequent forms of exclamation and ejaculation, as *Gedge Olmuthz*, *Paſſe-Gedge Vækkiet*, that is, O man of ſtone, O holy ſtone, aſſiſt me I conjure thee! alſo *Vaekkiet buorre*, *Paſſe Vaerre*, *dato Mudngij dal haette bodi!* that is holy and good mountain, aſſiſt me in my affliction, and other numerous appellations by which they invoke their gods, in mind and manner altogether heathen. And as they believed their gods could be appeaſed with ſacrifices in thoſe places where they preſided, they frequently ſacrificed to them after the manner of their country. But this ſubject will be treated of more diffuſedly in the following Chapter. The account of an uncertain author, not long ſince fell into my hands, which as containing a hiſtory of ſome of the gods of this nation, I ſhall tranſcribe at large for the reader.

A ſhort Relation of ſome of the Idols of the Pagan Laplanders, and their Idolatry.

The Laplanders fancied for themſelves gods reſiding in various places.

1. They placed ſome in the heavens, and in the ſidereal ſky.

2. Others in the lower region of the air.
3. Others were, in their opinion, terreſtrial.
4. Others ſubterranean, yet not very far under ground.
5. Others had their habitations in the very bowels of the earth.

Of the gods inhabiting the ſtarry manſions the greateſt is *Radien;* yet it is uncertain, whether he is over every part of the ſidereal ſky, or whether he governs only ſome part of it. Be this as it may, I ſhall be bold to affirm, that the Laplanders never comprehended under the name of this falſe god, the true God; which is obvious from this, that ſome have not ſcrupled to put the image or likeneſs of the true God by the ſide of their *Radien*, on Runic boxes. This *Radien*, when eſpecially he is characterized by the name of the *Zhioaarve-Radien*, is invoked for the proſperity of houſehold affairs, for the increaſe and the protection of the herds of rein-deer. The buſineſs of this falſe god was to inſpire a ſoul into the fœtus while forming in the womb, which they feign *Maderakko*, receiving from *Radien*, gave to his daughter *Sarakka*, whoſe duty it was to fit the body to it, whence is produced, as it were, a perfect fœtus. The ſame *Radien* receives the dead to him, after they have been ſome time in the regions below; but thoſe who for a bad life in this world, and therefore hateful to the gods, are caſt down into the region of torture, a place in the depths of the earth foul and ſqualid, never return to the happy manſions of *Radien*, damned to eternal impriſonment in the region of torture, or of Pluto.

Ruona-Nieid holds the next honours to *Radien* in the ſtarry ſky, a god, if you believe the Pagan Laplanders, diſtinguiſhed for virtue and power, the preſident and keeper of the mountains, when blooming in the ſpring, and producing freſh herbage for the rein-deer. To him they offer ſacrifices in the beginning of the ſpring, that their rein-deer may be the ſooner led out into the freſh paſtures.

The gods who have got manſions in the lower regions of the air follow in order.

1. *Beive* or the Sun; for the Laplanders hold the ſun for a god, who with his light cheers the world, makes it fertile, and full of graſs for paſturage for the rein-deer. They are employed in rendering him propitious to them, by ſacrificing to him on the eve of St. John the Baptiſt; that, as a Phœbus, he may frequently and cheerfully ſcatter his light. Sacrifices are offered to him on account of the various ills they are afflicted with, particularly the inflammation of the brain.

2. *Horangalis*, or thunder. Him the Laplanders dread, as a god inclined to wrath beyond their conception, ſtriking not only mountain tops and trees, but men alſo and cattle. To divert his wrath from them, they endeavour to appeaſe him by ſacrifices.

3. *Giſen-Olmai.*

4. *Bieg-Olmai*, the god of rain, the ocean, and of winds, whom they worſhip as the ſubduer of the ſea, and of the winds.

5, 6, 7. *Three Ailekes Olmak*, in whoſe honour the days of the week, Friday and Sunday are conſecrated; though there are among the Laplanders, who think ſomewhat different on this part of theology, and contend that Friday is dedicated to *Sarakka*, Saturday to *Radien*, and Sunday to the three *Ailekes-Olmak*, of whom mention is made here. They add beſides, that ſhould they happen to violate theſe ſaid days by profane labour, that they inſtantly appeaſe their deities by ſacrifice.

Of their terreſtrial gods the principal are, *Leib-Omai*, who is worſhipped as the god of hunting, and to that intent, that he ſhould deign to favour the uſe of guns and arrows in the exerciſe of them. And as it was uſual with the Laplanders to venerate their gods at ſacrifice, with prayer and genuflexion, ſo is the ſame ceremony uſed morning and evening with the greateſt religion in the veneration of this idol. There

is alſo an ode uſually recited on his anniverſary. *Kioſe-Olmai* is the god of fiſhing, who, to favour a fortunate and happy capture of fiſh, receives divine honours.

Maderakko with her three daughters is the goddeſs, who brings ſuccours to females: her they endeavour to render propitious by religious worſhip, that ſhe may permit her three daughters to ſuccour women when the occaſion calls for it. Some contend that ſhe herſelf gives the aſſiſtance; others deny and ſay ſhe does it by promoting the endeavours and labours of her daughters.

The eldeſt of the daughters of the goddeſs *Maderakko* is called *Sarakka;* this is ſhe who prepares the body for the fœtus in the womb of its mother, when *Radien* has let down the ſpirit or ſoul from heaven, as juſt mentioned: ſhe is believed to be the aſſiſtant of women in labour, and is ſorely affected by their pains as the woman herſelf. That irreligious and abominable ſacrifice, before the uſe of the Lord's Supper was introduced, is ſaid to be inſtituted in honour of this goddeſs; and ſince the preparation of the body and blood of the embryo in the womb is aſcribed to her, the body and blood of *Sarakka* is ſaid to be eaten and drunk, horrid to relate, in the falſe ſacrament. Others contend that in the ſaid ſacrament that the body of *Leib Olmai* is eaten, but that the blood of *Sarakka* is drunk; but in ſo aſſerting they commit a manifeſt error, in a matter in every other reſpect foul and full of blaſphemy, in confounding *Leib Olmai* with *Radien*, to whom, as contributing to the fœtus in its formation a ſpirit, this honour, ſuch as it is, is due; whereas *Leib Olmai* contributes not all to the formation of man. And ſo it is, or as it is manifeſt itſelf from this, that there are Laplanders who confeſs that they have eaten the body of *Radien*, and drunk of the blood of *Sarakka*, in this abominable rite. But this goddeſs is moſt religiouſly worſhipped by both ſexes, chiefly by the women, and eſpecially when in labour, who, in order to obtain an eaſy delivery, often drink to her honour a cup of brandy, and offer, in the hope and wiſh of an eaſy and happy delivery, a libation of meal, water, and honey.

The next in order of the daughters of Maderakko is called *Juks-Akka*, the goddeſs in whoſe power it lay to convert the female in the womb into the male offspring. This goddeſs they ſtrive to bind by ſacrifices to her, becauſe they prefer a male to a female child, by reaſon of their life occupied ſo much in fiſhing and hunting, to which they are addicted, and for the exerciſe of which the males are preferable to the females.

They call the third daughter of this goddeſs *Ux-Akka*. She undertakes the care of new-born infants, cheriſhes them and protects them from all thoſe accidents to which that tender age is expoſed. She attends to the monthly ills of the ſex, that they ſhould return in good time, and ceaſe alſo, on account of which ſhe is religiouſly worſhipped.

To this claſs belong alſo thoſe named *Saivo-Olmak*, or mountain gods, who aſſiſt all and every one requiring their aſſiſtance, or are addicted to thoſe chiefly who buy them for a conſideration from other *Noaaids*, that is, magicians, or procure them by a certain ſingular ſkill of the *Noaaids*, that is, magic art. Theſe are ſaid to give reſponſes to ſuch as conſult *Saivo Olmak*, which the Laplanders contend to be done in various ways; by viſions in ſleep; by *Myran* on Runic tabors; on a girdle in a gun; on ſtones, on horſes' bones, &c. When the magician is exerciſing his art that he might get ſome *Saivo Olmait*, as a tutelary god with him, he refreſhes himſelf with a draught *Saivo-Zhiaze*, that is, of mountain-water, as a recruit of ſtrength, which he repeats by intervals, eſpecially when he has to enter into a trial of the pre-eminence of ſtrength with other magicians. In this conteſt theſe magicians commit their *Saivo-Sarva* (by which is underſtood male rein-deer) to fight. The ſame iſſue as attends theſe attends their maſters; ſo that if the rein-deer ſhould loſe his horn in the conteſt, the maſter of him, by a kind of ſympathy, begins to get ill and languiſh.

The *Saivo-Lodde*, or mountain-bird, is numbered with them: its office is to ſhew the way to a magician while journeying. The Laplanders ſay that this bird is frequently ſent out by a rival and revengeful magician, to the deſtruction of magicians and other men.

There is alſo a certain *Saivo-Guelle*, by which is underſtood a mountain fiſh, deſtined for preſerving the life of a magician when going to depart into *Jabme-Aibmo*, or the land of the dead, and thence to bring back the ſpirit of the man ſick to death; for an opinion prevailed among the Laplanders formerly that the ſpirit of ſick men, leaving the ſick body on earth, paſſed to the land of the dead, and that the body would quickly haſten after it, unleſs the ſpirit, by the aid of a magician, was brought back in good time. From this jocular, and at the ſame time abſurd opinion, the ceremonies for bringing back ſouls from *Jabme-Aibmo* into the body, made to the gods, drew their origin.

They even fabulouſly create a certain *Namma-Guelle*, or naming fiſh. They feign that very few can have this, unleſs on the ſecond baptiſm of the infant. Mention being made of a mode of anabaptiſm, it is proper to point out in a few words that that ſpecies of baptiſm, which was formerly among the Pagan Laplanders, was wicked and diabolical; that it was a baptiſm often reiterated, and that as often as a man fell into any dire illneſs, that he aſſumed a name different from the one he had hitherto uſed; and that it was performed by the ſprinkling of water, and in this ſolemn form: "I baptize thee in the name N. N., in which henceforth proſper." This newly-acquired name, the former being aboliſhed, was the conſequence of this anabaptiſm, and is altogether idolatrous, being derived from the grandfather, or great-grandfather of him who happened to have the luck of a naming fiſh in his family.

Thoſe of the ſubterranean deities, who do not live deep in the earth, are believed to inhabit the region of *Jabme-Aibmo*, where *Jabme-Akko*, or the mother of death, holds her empire. Thoſe who deſcend to this region hold, when dead, the ſame degree of dignity which, when living, they held in this life, clothed in a new body, in the place of that which periſhed in the grave. To theſe deities ſacrifices are frequently made for the life and ſafety of man; and that the more religiouſly, as the Laplanders are thoroughly perſuaded that *Jabme Akka*, as well as the manes, are incited by a ſtrong deſire of ſummoning and dragging daily to their abodes living mortals; and that nothing is more grateful to the dead themſelves than to ſee ſome of their relations and children aſſociated with them in theſe very manſions.

Rota-Aibmo, or the region of torture, is feigned to be the ſeats of the gods reſiding in the bowels of the earth. Into this hell are thruſt down all thoſe who have led a life impious, wicked, and hateful to the gods, deprived of all poſſible hope of ever coming to the happy manſions of *Radien*. This is the manſion of torture or pain, of that falſe god to whom the Laplanders addreſs their prayers, when in vain they have called others to their aid. The Laplanders fable that this *Rota*, or god of torture, on whom we are diſcourſing, infeſts men as well as cattle frequently with diſeaſes, and that the malady cannot be otherwiſe averted than by ſacrificing to this malignant god; for help would be ſought for in vain from the other deities, as inefficient when oppoſed to him. It has been obſerved that the Laplanders do not uſe the ſame rites in the worſhip of this god as in their worſhip of others. Agreeably to the vulgar rite in their profane ſacrifices, when the animal deſtined for the ſacrifice was ſlain, as many of the friends were invited to the feaſt as were ſufficient for the eating of the fleſh taken from the head, back, and feet of the animal ſacrificed. The blood was ſprinkled on a variety of trees, artificially cut and carved according to the cuſtom of the nation, and diſpoſed in order

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in honour of the gods, around altars: certain fragments of the bones, tongue, lungs, heart, head, ears, and tail being laid alſo on theſe altars. When ſacrificing to this deity, *Rota*, they bury a dead horſe in the ground, to the intent that pernicious and hateful god ſhould by its aid withdraw as faſt as poſſible to his abode, and ceaſe to moleſt them any more. It happens, though very ſeldom, that they ſacrifice to this idol by a common and uſual rite; in which caſe they faſhion his image to the form of man, and place the bones of the animal they have ſacrificed on the altar, yet without any thing on them, to *Rota*; as alſo they uſually do to their other gods, for the purpoſe of covering them with fleſh. For the Laplanders have this opinion, that their gods are as equally ſatisfied and contented with the bare bones of the animals ſacrificed to them, as if they were covered with fleſh and entire. And for the reaſon that they aſcribe to them infinite power as to gods, and ſay that nothing would be more eaſy for them than to create fleſh, and ſo when created, to put into it bones.

Hitherto this doubtful relation, for the truth of which in every thing I dare not vouch. Certainly *Radien*, *Ruona-Nieid*, *Maderakko*, with her three daughters, *Sarakka*, *Juks-Akka*, and *Ux-Akka*, of whom mention is made, are names totally unknown to the Laplanders of that tract of country where my miſſion lay; concerning *Saivo-Sarva*, *Jabme-Aibmo*, or the land of the dead, when interrogated on theſe matters, and others which occur in this celebrated hiſtory of their deities, they did confeſs that they had heard ſomething by rumour of them. Yet in moſt things I agree with the author, whoever he was, little doubting but theſe things which he related as among the Laplanders of the country of Drontheim and Norland were ſo far formerly held as true, that I need but mention for the preſent this one circumſtance, in confirmation that *Radien*, *Bieve*, and *Rota*, or Pluto, and ſome others, may be ſeen pictured on their Runic boxes, which place before us a compendium of Lapland heathen theology; and even the names given to the idols agree in part with the offices by which they are deſcribed. Scheffer mentions that the Laplanders adored chiefly three idols, namely, *Thor*, *Stoer-junkare*, and the ſun, and diffuſively lays down the rites to be obſerved in their ſacrifices. The two former idols are at this day unknown to the Laplanders of Finmark.

Joulo-Gadze were well known to the Laplanders inhabiting Finmark. The *Joulo-Gadze*, if you believe the Laplanders, were certain evil ſpirits, to whom formerly they religiouſly ſacrificed on the eve of the Nativity of Chriſt, old ſtyle. The *Noaaide-Gadze*, or the aſſociates of the *Noaaids*, or magician, were ſo called from the information and aid which they were believed to give to the magician. Theſe, together with the *Joulo-Gadze*, were very well known to the Laplanders, among whom thoſe who were reputed for prudence and belief, affirmed with one voice that the *Noaaide-Gadze*, or aſſociates of the magician, were ſpirits that uſually appeared under the form of children, and in the Lapland dreſs, in dreams, and even in clear day, to the Laplanders. Theſe recommended their ſervices and attention, pledging their faith that they would effect, if admitted into the family, that their maſters ſhould become ſkilful and handy, and that they ſhould be proſperous in hunting, in fiſhing, in curing the diſeaſes in men and cattle; and that they ſhould more eaſily obtain their admiſſion, they added, that before they hired themſelves to the parents, that nothing was more equitable than that they ſhould perform for the ſons and grandſons the ſame kind offices, as appertaining to them by hereditary right. If the magician, of his own free will and kindneſs, admitted theſe ſpirits, he obtained at the ſame time with them alſo *Torvo-Paike*, or the caves and mountain abodes which the *Noaaide-Gadze* had hitherto poſſeſſed as a tutelary retirement; if not, they obtained even by threats that they ſhould afterwards be admitted. When at length admitted, either graciouſly or without conſent, they taught the *Noaaids* their

their whole manner of ſacrificing, the myſteries of the magic art, and the *Juoige*, that is, the art or manner of religiouſly ſinging magic hymns. Theſe *Noaaide-Gadze*, who were, as juſt mentioned, aſſiſtants and coadjutors of the *Noaaid*, or magician, and whom, for the diſpatch of buſineſs, he could not do without, with regard to the Laplanders, were ſeparated into two claſſes: the one forming *Buorre-Gadze*, that is, good ſociety; the other, *Borram-Gadze*, that is, gluttonous, or bad company. Thoſe who were of the *Buorre-Gadze*, or good ſociety, dedicated their labours and offices to the *Noaaid*, or magician, in curing diſtempers, in expelling flies, if any were ſtung or injured by them, and to other laudable and good works of this nature.

Others were called *Perkel-Gadze*, or diabolical ſociety, for the purpoſe of aſſiſting the *Noaaid* to injure others, and by the magic art deſtroy both men and cattle, both as authors and as adviſers. They called the ſame *Borram-Gadze* a gluttonous and malignant ſociety, becauſe they were believed to be ſolely intent in calamities of every kind, and in producing and effecting miſchiefs, like a conſuming fire. *Vuokko* is alſo well known to many of the Laplanders, and deſcribed as a bad demon, appearing in the form of a huge and foul bird, from which the *Noaaid*, or magician, is ſaid to receive thoſe infamous and noxious flies, the cauſe and means of ſo many bad effects.

To theſe I ſhall add ſuch as the Laplanders have not, as it appears to me plainly, counted among the number of their gods, nor deigned worthy of the honour of religious worſhip and ſacrifices, yet influenced by ſome ſuperſtition in their behalf; ſuch as *Stallo*, a prodigy equally known to the Laplanders, but ſeldom appearing; in ſable veſt, but elegant attire, holding in his hand a ſtick, and provoking to conteſt any one he meets.

Concerning this prodigy I ſhall relate what follows, but aſk pardon from the reader for a very ridiculous narration. They relate that the ſaid Simon Kiœs, whom we mentioned before, had killed at a time a *Stallo*, and ſome time after that he had killed another, in attempting to revenge the death of his aſſociate that he had ſlain, having uſed this ſtratagem: he made an aperture through the door of his houſe (the houſe and door I ſaw), through which he way-laid and ſhot him when paſſing, and he remembered that the *Stallo* was killed and privately buried by his father; and that the ſpoils taken from the enemy were, namely, a ſtick, in which was a dagger, and a ſabre, out of which he made knives for his ſon Peter, and ſon-in-law Nicholas Kiœs. The authority of this ſtory reſts on them, the ſons of Simon Kiœs, as alſo ſeveral Laplanders from Porſanger, from whom I relate it, and leave it to be examined by the reader. But concerning *Stallo*, of whom mention is made ſo often among the Laplanders, what opinion to form on it; I confeſs myſelf at a loſs to ſay, and leave it to the judicious reader to determine.

The Laplanders feign alſo a certain *Zhiokkuſh*, or cauſe of ſudden illneſs; hence frequently among them, when any one is ſeized with a ſudden diſorder, they ſay, *Zhiokkuſh ſuu pazhji*, that is, the *Zhiokkuſh* has ſtruck him.

There are beſides a kind of ſpectres, in Norwegian *Udboer*, but in Lapland called *Epparis*, or *Shjort*. This kind of ſpectre is believed to wander up and down where any infant who had not received a name had been ſlain. It is feigned to cry out until the infant has a name given him, then to vaniſh.

The Laplanders adopt an opinion, in common uſually with the Norwegians, concerning certain ſubterraneous beings, commonly called *Goveiter*, fancying to themſelves, I know not how, certain inhabitants who live under ground. *Zhiakkalaggak* are accounted by many as ſpectres, uſually appearing in the ſhape of infant children; but, as a certain Lapander has aſſured me (by name Henry Sarreſon, the grandfather of Andrew Porſanger, who, in 1758, ſent from the ſchool at Drontheim to the college, now rector of the church which is appropriated to the hoſpital of the ſaid town, a pious and honeſt

honeſt man), there are living in deep ſprings, certain animals not very unlike to infants, if you look to their figure yet ſmooth, and without hair; he ſaid that their fleſh was well reliſhed; that they were to be caught but ſeldom, and this only by art; by a plate of butter put at the ſide of the ſpring where they keep. By the ſcent of this, the *Zhiakkalaggak* allured, immediately come up, and, when riſing, are ſhot by men who lie in wait. If ſuch animals really exiſt, and that there was an opportunity of getting them, they would be worthy of a place in the king's muſeum.

There was a certain Laplander dwelling in Porſanger, of the name of Andrew Eſkildſon, among the Norwegians called Andrew Bredeſkalde, that is Andrew Broadfront, commonly ſo called, who died a little before my coming into this country. He, as the report ſays, uſually prayed to Saint John for women in child-bearing.

CHAP. XX.—*Of the idolatrous Sacrifices of the Laplanders.*

THE names of the Lapland idols, as well as the rites uſed in their worſhip, ſo vary from the various ſituations inhabited by Laplanders, that to give an exact deſcription of them, would, in this chapter, be extremely difficult; meantime, what I have obſerved whilſt among them, or have learned from the obſervations of others who were ſkilled in theſe matters, I have determined to communicate to the reader.

Animate things chiefly, and among theſe principally rein-deer and ſheep, ſeals ſeldom, were ſacrificed to the gods. Inanimate, as milk, rice-milk, cheeſe, and other things of this nature were alſo ſometimes offered.

The rites uſed in ſacrifices were various and manifold. In the ſacrifices of living things, either the whole animal, or at leaſt ſome part was offered.

Sometimes they boiled the whole animal, and when boiled, devoured it, except the bones, which were left for the god of the place, whom, they little doubted, was able and willing to cover them with new fleſh. It was their practice to erect certain long ſticks, beſmeared with the blood of the victim, in the place where the ſacrifices were made. Sticks of this kind were called in Lapland *Liet Morak*. Sometimes they uſed to ſacrifice the animal at a certain river, into which the blood of the victim was poured; certain ſticks ſtained with the blood being ſolemnly erected in the place of ſacrifice.

If they happened to kill a bear, when the ſkin was ſtripped off, and ſome part of the meat was boiled, the liver was taken out, which, put on a ſtake and roaſted at the fire, as a hoſt or kind of ſacramental ſacrifice, called in the Lapland *Vuodno-baſſem*. The Laplanders are ſaid to offer certain ſacrifices for young children, in this order; for an infant as yet in the womb, a ſheep; for the ſame, when born, a dog, which was buried alive, and, after birth, any animal dreſſed in a linen hood.

The method of ſacrificing inanimate things was thus: they poured brandy and liquids of ſuch ſort on the ground to propitiate the *Lares*, who were believed to inhabit the hearth or threſhold; in that libation which they called *Seime-Staebmae*. To pour the beeſtlings of a cow the firſt time ſhe brings forth young, on the floor of the cow-houſe, belonged alſo to the ſacred ceremonies. When going to dwell in a different place, they had a cuſtom of pouring milk on the place from whence they were coming, in order to declare a grateful and devoted mind towards the deity of that place, on account of the benefits received during the whole time of their reſidence in it.

The diſeaſes with which men as well as cattle were at different times affected, hunting and fiſhing that was unſucceſsful, and ſuch incidents, furniſhed the Laplanders with opportunity and even neceſſity of appeaſing their gods by ſacrifices. Victims were chiefly

chiefly ſlain when they were ſucceſsful in fiſhing and hunting. This is apparent from the deſcription of a very famous place of ſacrifice, *Leunje-jauvre ſuolo*, given by me. In the places where they had ſlain their rein-deer, they uſually left behind them ſome ſmall parts of the beaſt they had taken, horns, and parts of the fleſh which had covered the ſkull and feet, in token and ſignification of a mind devoted to the gods.

As to the places in which the Pagan Laplanders had formerly ſacrificed, it appears, that they were various ſacred high places, *Paſſe Varek*, in the bay of Varangar, in the pariſh of Vaſo, in the diſtrict of Thana, in the bay of Laxefiord, in the pariſh of Kiollefiord, in the bay of Porſanger, and many others, which they held in religious veneration.

Paſſe Varek, or ſacred high places, which they formerly held in religious veneration in the bay of Varangar, are as follow:

1. *Meiſke-Vare Paſſe-Aldo*, that is, ſacred rein-deer of the mountain of Meiſke. That which is called ſacred is really ſo, or is ſaid to be, or to have been very little ſo. The female rein-deer in the Norwegian is called *Simle*. Hence whatever high places, called from *Paſſe Aldo*, or ſacred rein-deer, were formerly conſecrated, had their name, no doubt, from the rein-deer, which were ſacrificed there. The mountain mentioned is ſaid to be ſituated in the inner receſs of Varangar bay; hither is a great concourſe of Laplanders. The upper part is a level, the lower is covered with a wood of birchen trees. There is a report that ſacrifices were formerly made to the idol *Storjunkare*, in that place, and, in proof of the ſacrifices which they made there, a number of the bones of the rein-deer a few years hence were ſeen in that place.

2. *Styrèn-Aldo*, that is, rein-deer of the mountain Styre. In this place, the Laplanders formerly worſhipped thunder.

3. *Nieid-Vare Paſſe-Aldo*, holy rein-deer of the virgin mountain. Here was a ſacrifice performed to the *Joulo Gadze*, or to the ſociety of the Yules.

4. *Kalbmen Baſte*, that is, the cold rock, or rock of cold.

5. A certain ſtone, called in the Lapland *Zhievres-Ibmel*, that is, god of the otter. And here the very name is a proof of the idolatry that was formerly exerciſed in that place.

6. *Guuli-Ibmel*, that is, god of fiſhes. For good luck in fiſhing, it appears, that they had formerly ſacrificed at this ſtone.

7. *Muorje Ibmel Paſſe-Aldo*, that is, ſacred rein-deer of the god of berries. Even the very name of the divinity given to this mountain ſufficiently declares, that it was formerly ſacred and religiouſly worſhipped.

8. *Juur-Vuodna Paſſe-Aldo*, that is, ſacred rein-deer of the bay of Juuren.

9. *Raige-Baſte-Aldo*, that is, rein-deer of the perforated rock.

10. A certain mountain of immenſe height, named by the Laplanders *Balda-Zhiok*, is called *the Great Flounder's Head.*

Paſſe-Varek, or ſacred rocks, which the Laplanders have religiouſly adored on the ſummit of the mountain Neiden, are as follow:

1. *Niaekkem-Karg*, that is, the mountain of creeping.

2. *Ruoude Zhiold*, that is, iron ſummit.

3. *Ullo-Vaerre*, that is, mountain of wool.

4. *Jerge-Jerge*, that is, rocky ſtone. By the way, it is to be obſerved, that certain Laplanders call a ſtone *Jerge*, which others in their dialect call *Ged'je*.

5. *Zhiuodzhio-Akkom*, that is, my abiding grandame; meaning grandmother by the father or mother's ſide, which in no ſmall number of places of Norway is ſo called.

6. *Zaagees-Baſte*, that is, rock of foundation.

7. *Guuli-baſti-vaerre*, that is, mountain of the rock of fiſhing.

Paſſe-Varek, or ſacred mountains which the Laplanders worſhipped beyond Varangar, along the coaſt, are the following celebrated ones.

1. *Raudo-Vaerre*, that is, the mountain *Raudo*; *Raudo* is a freſh water-fiſh, reddiſh under the belly, called in the Lapland *Raudo*, but in the Norwegian *Rör*.

2. *Baelje-Vaerre*, that is, mountain of the ear. The meaning of this name, as far as I can conjecture, is, that the wretches who make their ſupplications to this idol, are perſuaded that he will graciouſly lend his ear to their ſupplications.

3. *Ryto-Zhiok*, that is, the top of the Pot Mountain. On this mountain is ſhewn a ſtone, reſembling a man in his natural poſition and form, clothed in a hood. It ſeems too very probable that this name was given to the rock for this reaſon, that the Laplanders boiled there in pots the meat of the ſacrifices, which they ate according to their uſual manner of ſacrificing, leaving the bones for their gods.

4. *Einar-Sieide*, that is, oracle of Einar.

5. *Sieide Vaek-Aldo*, that is, rein-deer endowed with the faculty of an oracle, or of divining.

Paſſe Varek, or ſacred mountains near the river Thana.

1. *Golle Vaerre*, that is, mountain of gold. Here formerly, on account of the ſignal ſucceſs in taking of wild rein-deer, frequent, and, conſidering the condition of the nation, ſumptuous and fat ſacrifices were uſually offered.

2. *Galdo-Oaaive*, that is, head of the ſpring of water; a mountain ſo called.

Paſſe Varek, or ſacred mountains in the diſtrict of Thana are the following:

1. *Sieid*, that is, the oracle.
2. *Giems Baſte*, that is, rock Giems.
3. *Stang-Naes*.
4. *Jokkel Nearg*, that is, promontory, or little tongue of land, Jokkel.
5. *Kolds Niarg*, that is, promontory Kolds.
6. *Stoppel Niarg*, that is, promontory Stoppel.
7. *Horne baſte*, that is, rock of horn.

Paſſe Varek, or ſacred mountains, which the Laplanders have conſecrated at Hobs-Eidet, the iſthmus of Hobſen, to the worſhip of idols, are as follow:

1. *Vuoide-Ged'ge*, that is, the ſtone of unction; deriving its name from the blood or oil of the victim, with which, at ſacrifices, it was anointed.
2. *Ravos-Niarg*, that is, promontory of faſting.
3. *Klem-Niarg*, that is, promontory Klem.
4. *Sagga-Niarg*.
5. *Loidoſh*.

The ſacred mountains which were formerly religiouſly adored in the bay of Laxefiord are the following:

1. *Vaddes-Baſte*, that is, difficult mountain.
2. *Gie-Vuoude-Aldo*, that is, rein-deer of the wood of Gien.
3. *Ailekes-Vaerre*, mountain of holineſs.
4. *Lieule-Oaaive*, head of vapour.

Paſſe Varek, or ſacred mountains in Porſanger bay, are mentioned as the following:

1. *Alek-Baſte*, that is, ſea-green rock.
2. *Sölfar-Kapper*, that is, hood of Solfar. This was the moſt celebrated of all thoſe places devoted to ſacrifices and religious worſhip by the Laplanders; it was ſituated in the ſouthern part of the bay, half a mile diſtant from the ſea. The place itſelf,

which I remember, from curiosity, to have visited, consisted of two very high stones placed opposite each other, the one of which was covered over with moss. Near the stones were laid certain small spits or stakes, called *Bassem-Morak*, which the Laplanders formerly made use of when, in honour of their false god, who, they believed, presided over the place, they would indulge their genius in feasts, and would throw to their idol, as above mentioned, the bones of the sacrifice bare and alone. Around these stones various sticks, made from dried fir, which is said to preserve itself against putrefaction as long as possible, were set up crosswise, like the letter X, with the following characters, IIIXXXIII+++IIIXXX, engraved, three being drawn in a right line, and as many on the oblique line. Towards the south stood a long beam, of a square form, marked with the same characters as the aforesaid sticks, with the lower end fixed in the ground, but with the upper inclining towards the south, where it was passed through with an iron spike formed like that iron one by which the poles of boats and other vessels of this sort are put together; whence the conjecture is not unlikely, that they worshipped the idol Thor, as Scheffer makes mention, in this place, though no such idol as Thor, or Storjunkare is known at this day by the Laplanders of Finmark.

3. *Dierge Niarg.*
4. *Sieide-Bafte*, that is, the rock of the oracle.
5. *Naad'd'e-Vaerre*, that is, the mountain of labour or burthen.
6. *Mikko-Vaerre*, that is, the mountain of Michael.
7. *Niarkutzh.*
8. *Gaise-Varatzh*, that is, the little rock with a point.
9. *Vuorje-Zhiok.*
10. *Leunje-Jauvre-Suolo*, that is, island in the lake of Porsanger river. This island is situated in a certain lake, called Leunje-jauvre, out of which a river, very famous for the produce and catching of salmon of Porsanger bay, flows. On the further side of the said river a great heap of rein-deers' horns is seen, of which most are corrupted and eat through, from the injury of the air, with damp and rottenness, some fallen into the lake, others converted by the Laplanders themselves into spoons and such like utensils. In this island the Laplanders had of old time, a temple, to speak so, not without celebrity; who, when they formerly went out to hunt the rein-deer, on this lake in which is the island, while some would compel on one side the wild animal to fly to the lake, others, on the opposite side, would lay hold of him swimming, with their bows and arrows, by which means they now and then enjoyed no small booty. It was their custom to leave the horns in the island, lest they should seem ungrateful towards the deity of the place, as a kind of sacramental offering.
11. *Vuolla-Niudne*, that is, nose of Vuolla.
12. *Smeer-Vuodna-Noaiid*, that is, the magician of the bay of butter.
13. *Smeer-Vuodna-Niarg*, that is, the promontory of the bay of butter.
14. *Kokko-Giedde-Niarg*, that is, the promontory of Kistnand.
15. A certain rock not far from the shore is seen, in which there is a figure, or rather a certain white spot, bearing likeness to the shape of a man, turning his feet upwards and his head to the ground. The Laplanders formerly, before the darkness of their ignorance was dispelled, used to offer sacrifices to this rock, or what is more true, to this likeness of a man appearing in the rock; for on sailing by the place, as a proof of their devotion to this idol, they gave a small piece of tobacco, if there was nothing else at hand.
16. *Daume Salo-Sieide*, that is oracle of the island of Thamsoe.
17. *Snoiba-Niudne* that is, nose of Snoiba.

18. *Suolo-Aldo*, that is rein-deer iſland.

19. *Sieide-Niarg*, that is the promontory of the oracle.

20. A certain ſtone called in Lapland *Gameditzh*. A certain Laplander from Porſanger Bay, himſelf being an eye witneſs, told me, that another Laplander of the ſame place, whoſe name was Peter Siverſon, as often as he went out to fiſh, had a cuſtom of calling on the ſaid ſtone *Gameditzh* and to make offering in the name of this ſtone, and religiouſly to have offered it a piece of meat, taken from his proviſion cheſt, in hope and expectation of a happy capture.

21. In the bay of Kaafiord, near the pariſh of Kielvig, is ſaid to be a certain mountain, ſacred to the worſhip of idols.

22. So alſo in a certain iſland called *Magerœ* a certain ſacred mountain in the Lapland *Serve*, that is, community, is celebrated by fame.

23. In the gulf of Hvaleſund in the pariſh of Hammerfeſt, is ſaid to have been a certain ſacred mountain called *Akkieſtab*.

24. A certain place alſo conſecrated to religious rites, is ſaid to have been in the pariſh of Alten.

That there have exiſted formerly in Finmark, a ſtill greater number of holy places, though not ſufficiently known to me, I do not mean to deny; but thoſe already mentioned, abundantly ſhew the foul idolatry of the country covered with the ſhades of ignorance.

The religious and ſanctified places of the Laplanders, were diſtinguiſhed by a certain ſingular and unuſual form from the reſt: for inſtance in the ſacrificial place called *Solfar-Kapper*, of which mention has been lately made; two ſtones ſharpened to a point were ſeen ſet upright, and laid near to each other. In the ſame place, towards the ſea, where it was uſual to ſacrifice with ſmall pieces of tobacco, the figure of a man is to be ſeen with his face towards the ſea.

On a certain promontory in the pariſh of Kiollefiord, a ſtone of unuſual ſize is ſeen, ſo formed by nature, as to exhibit to thoſe who ſee it from a diſtance, the repreſentation of a temple, adorned with a tower, whence it is named alſo to this day a Lapland temple. That the Laplanders had formerly ſacrificed in this place, has not been as yet diligently examined into by me, nor why they ſhould make this a place of ſacrifice do I ſee any fit reaſon, eſpecially when the inconvenient and inacceſſible ſituation of the place ſeems to oppoſe it; yet the very name of the place, namely a Lapland temple, ſeems to indicate that ſacrifices were formerly made there. But the poor ignorant inhabitants had taken into their head, ſuperſtitiouſly that there was ſomething divine in thoſe places, which were diſtinguiſhed from others by a certain unuſual form, and that they ought to be religiouſly worſhipped.

But in what a high degree of eſtimation theſe mountains were held by the Laplanders, and how religiouſly worſhipped, can be proved by a variety of proofs, ſome of which I ſhall adduce. They approached theſe ſacrificial places clothed in feſtive garments, and there rolled themſelves down at the feet of their idols. They viſited them yearly, and though they would not offer freſh ſacrifices every time, yet they would by no means touch the bones of the animals that were ſacrificed. They would not dwell in the *Paſſe-Varek*, or ſacred mountains, leſt they ſhould diſturb the divinity of the place, by the cry of infants or any other noiſe: it was thought impious to ſleep when ſailing or riding by the *Paſſe-Vaerre* that is any ſacred mountain, leſt by this inattention they ſhould ſeem little to regard their god, either to raiſe the voice, to kill an animal, though in the way, to utter the leaſt noiſe, were things forbidden, leſt in any reſpect they ſhould be diſagreeable and troubleſome to their falſe god. Have they on a ſky blue

garment, on paſſing, they take it off with veneration. Women paſſed by with averted eyes, and there faces covered. As often as the men were diſpoſed to go to the *Paſſe-Vaerre* or ſacred mountain for the ſake of worſhip, it was forbidden that they ſhould approach in the garment the woman wore before, leſt the ſanctity of the place ſhould be violated, and it was further ſubjoined that they ſhould not wear the ſhoes, which were made up together with the woman's.

And as the Laplanders, during times of ignorance worſhipped certain mountains as the ſacred habitations of their gods by a principal ceremony, ſo did they perform the ſame honour alſo to their rivers and lakes, which from the names, which are annexed to them, *Ailekes Jauvre*, that is ſacred lake; *Paſſe-Jok*, that is ſacred river, is ſufficiently clear.

The ſacrifices were performed commonly in thoſe places, which the *Noaaid* that is the magician or prieſt aſſigned to them, yet ſo that they might be offered elſewhere, if the occaſion called for it. A certain Laplander from Porſanger bay, by name Melle Olſon, a man of character, and well deſerving of belief, told me, that a neighbour of his in the ſame place, very well known to him, had after hunting of ſeals, on his return, drank of a cold ſpring, and was ſeiſed with ſo violent a diſorder as to lie dangerouſly ill for ſome weeks, but on his recovery, that he had ſacrificed an ox in the place where he was ſeized with illneſs. The Laplander conſumed himſelf the meat of the ox that was ſlain, and covering the bones with branches and boughs of wood, he left them as the cuſtom with them is, careleſsly about, for the deity of the place.

In certain places it was formerly received as a cuſtom, that the prieſt who performed the ſacrifice, ſhould come to the rite, clothed in a hood, inſtead of a fillet, and a chaplet of leaves, ſuch as was put on the animal that was ſacrificed. The ſame was obliged to wear a white apron let down over his ſhoulders, in the act of ſacrifice. This ornament, differed but little from thoſe uſed by the ancient Romans, as well as the prieſts of other nations: for it is well known that the prieſts of the heathens had always come to the ſacrifices bound with fillets and chaplets, and that the victims, eſpecially ſuch as were ſacrificed to Saturn and Jupiter, were crowned in the ſame manner.

Beſides that foul and abominable idolatry to which the Laplanders were of old addicted, they wiſhed to ſeem to worſhip alſo the true God of the Trinity, in whoſe name they were baptized, whoſe word they heard, whoſe ſacraments they made uſe of, not unlike the Samaritans of old, who adored conjointly and together the God of Iſrael, and the feigned gods of the neighbouring nations.

But there is no doubt, that the Laplanders from the moſt remote times back, had at leaſt ſome knowledge, though defective and mangled, of the true God in the Trinity. What earneſt and ſolicitous care Louis the Pious, had taken for propagating the chriſtian religion through the norrh, is clearly and fully manifeſted from his not only baptizing Harald Klak, King of Denmark, together with the Queen in the temple of Moguntia, but from his ſending alſo Anſgarius, a monk of Corbey of France, into Denmark, together with Ambertus the aſſociate of his holy labours, whence afterwards they went into Sweden, publicly to preach the Goſpel in that kingdom, with permiſſion granted by Biorno the king in 828. Anſgarius, on his return from Denmark and Sweden, that he ſhould be nearer the northern countries, was appointed Biſhop of Hamburgh by the ſaid emperor Louis the Pious, with injunction that he ſhould carefully ſee that the knowledge of the true God, was not only carefully propagated among the people of the north in general, but alſo among the Skrit Fins, that is the Laplanders. The patent bears date in the year 834.

In ſucceeding times an opportunity was offered to the Laplanders of acquiring ſome knowledge, however imperfect, of the Saviour of the World, by the miſſion of Biſhop Halvard, in the year of Chriſt 1051, into Sweden, to the Warmlanders and Skrit-Fins, for the purpoſe of turning them to the true faith, and afterwards into Norway. It appears from hiſtory, that Olaus Trigueſon, that great founder of chriſtianity in Norway, had taken care that his ſubjects, ſhould be converted to chriſtianity from Wigia, and from thoſe to Helgeland in Norland. After him King Olaus Haraldſon, commanded the goſpel to be preached among thoſe living in the inner receſſes of the bays, who were Pagans, and as yet unconverted.

Jonas Ramus, an hiſtorian, not without celebrity, mentions, among other things, in the deſcription of the Kings of Norway publiſhed by him, that King Hagen Hagenſen, who came to the throne in 1217, had a temple built in the iſland Tromſoe near Finmark, and that a great number of ſtrangers, who came from Biarmeland were baptized, and that habitations were aſſigned to this new ſet, in the bay of Malanger.

Frederic I., of glorious memory, as ſoon as he came to the throne, in a council of the kingdom, held at Odenſe in 1527, gave in charge to the biſhops then preſent, that each in his dioceſe ſhould take care that the word of God ſhould be preached in clearneſs and purity. The ſame excellent monarch renewed by a decree in 1529, a full indulgence to the goſpel in his kingdom and realms, on the report of the celebrated hiſtorian Baron Holberg.

Arnas Berentſen of Bergen, in a certain book, named the Fruitful Abundance of Denmark and Norway, printed in the year 1656, mentions that the Laplanders were little acquainted with the true religion, yet in his time, that they were brought to a better knowledge of the true God, and were making daily proficiency in it.

There were ſcarcely any ſacred places for worſhip or clergymen in Finmark, before the Norwegians, called Normans, coming there, fixed their abodes; what is more, nor even before the time, when the college was eſtabliſhed moſt graciouſly for promoting the progreſs of the goſpel, which was begun in 1714, was there any place of worſhip any where in Finmark, in the neighbourhood of the Laplanders, as known to me, unleſs at Alten, in weſtern Finmark, where the Norwegians and Laplanders congregate in houſes ſufficiently near. But the Laplanders would make uſe of the houſes of worſhip, which were in the fiſhing places, next to the dwellings of the Norwegian peaſants, each in the pariſh in which they were allotted.

Now praiſe be to God, by the moſt benevolent eſtabliſhment of the Kings of Denmark of bleſſed memory, and by the chriſtian and enlightened diſpoſition and care of the moſt liberal inſtitution for promoting the goſpel; and of the biſhops of the dioceſe of Drontheim, they are provided with ſuitable places of worſhip, in which, where they before beſtowed their duties on male idols, whoſe alters were reeking with the blood of the victims they had ſlain, they can worſhip the Lord God of their fathers and ſerve him alone.

CHAP. XXI.—*Of the Magic Arts of the Laplanders, exerciſed by means of Runic Symbols, Flies: in the Cure of Diſorders by means of the Juoigen, or a certain Magic Song, and in the Reſtitution of Things taken by Theft.*

IT is my intention in this Chapter, agreeably to its title, to ſpeak of the magic arts of the Laplanders, by means of Runic ſymbols; yet the reader kindly will pardon me if

if I premiſe, before I enter on it, the various faſcinations that have formerly been practiſed by others.

The Aſiatic Odin is ſaid, firſt of all, to have brought the magic art into the northern regions, which made ſo rapid a progreſs afterwards, that many of the nobility are ſaid to have reached a very great degree in this art. The annals of Norway tell us, that the magic or Finnic art was ſo exerciſed at King Haldan's board, that the meats at table vaniſhed from before the eyes of the gueſts while feaſting.

Gunner, King of Norway, was ſo ſkilled in this art, that whatever attempts were making in Saxony to diſturb his dominions, he would not deign to prepare againſt them in Norway. Eric Vindhuus, King of Sweden, is ſaid to have been a true actor on this ſcene, for to whatever quarter he turned his bonnet a proſperous gale ſprang up in that quarter. Sivald, King of Sweden, who artfully attempted the kingdom of King Haldan, is ſaid to have had ſeven ſons well inſtructed in this art; and the magic art is attributed to the fair ſex of old time. A various aſſortment of infernal ſpectres is ſaid to have been ſhewn to King Haldan by a poor little ſorry woman. A witch in Norway, by name Kraka, is ſaid to have prepared a broth for Roller, the little ſon, by the virtue of which he would become very conſiderable, celebrated, and wiſe; but the ſon-in-law, Eric, who afterwards obtained the crown of Sweden, on taſting it was endowed with great wiſdom and eloquence. By the ſaid witch, concealed under the ſhape of a cow, for the purpoſe of committing murder, King Frotho is ſaid to have been ſlain. The daughter of King Helgeland, in order to be inſtructed in the magic art, is ſaid to have been ſent to Motle, King of Finmark. To what extent belief is to be given to numerous reports of this kind, is left to the ſounder judgment of individuals.

It is known from ancient manuſcripts that wizards of various deſcriptions, eſpecially ſorcereſſes, had lived to an advanced age in Norway; and that it ſhould be known if any perſon was guilty of the crime of witchcraft or not, that the ſuſpected perſon, according to the cuſtom received at that time, was thrown into water. If the perſon did not ſink, it was a ſure and unerring proof that the culprit was guilty of this crime. Before put into the water he was ſtripped, ſhaved, and examined, leſt he ſhould have any weight of iron about him that might occaſion his ſinking.

Witches made various confeſſions, in themſelves abſurd and ridiculous, of the manner in which they acquired the magic art. Some aſſerted that they obtained it from a certain charmed preparation, brought to them by another witch, made from a piece of the greater flounder, a piece of bread ſpread with butter, from a draft of milk, a piece of cheeſe, a ſalt herring, and bread. One confeſſed that ſhe had obtained the art of faſcination from ſtroking down a cat; another, from putting three eggs into a caſk, and filling it with water, ſaid ſhe had got the ſame magic art; another added, on her part, that it was got from a certain old woman, who gave her a pipe with this qualification, that on filling it ſhe would bring infection on man and beaſt of any kind whatever, and that ſhe by this means made herſelf witneſs of the art. Many other abſurd confeſſions were in like manner made on witchcraft.

Women, practiſing theſe and other ſuch like charms, made trial in various ways, as they themſelves confeſſed, whether they were qualified as witches for the art, and were found capable; by giving as a proof, that a ball of thread when thrown into water would of itſelf continue to roll through it; that an animal by blowing and ſpitting on it, in the name of the devil, would burſt. On their actions they further made daring and prodigiouſly wicked confeſſions; that under the figure of ſwans, crows, falcons, geeſe, ducks, ſeals, dolphins, whales, they had called up tempeſts, and had deſtroyed veſſels at ſea.

They

They further confeſſed, that while they faſtened three knots on a linen towel in the name of the devil, and had ſpit on them, &c. they called the name of him they doomed to deſtruction. One confeſſed that ſhe had raiſed a tempeſt, by means of wind ſhe had ſhut up in a ſack; and added, that ſhe deſtroyed a veſſel of Bergen, for which undertaking an immenſe wave came to her aſſiſtance and ſunk the ſhip. Another ſaid that ſhe, with other ſorcereſſes, had raiſed a tempeſt on ſome ſailors in this manner: they went to the ſea-ſide in a human figure, and going aboard a ſmall bark, in which were ſome men, who had a black heifer with them, they trod down with their united force the veſſel on the way. Another told a ſtory, how, after ſhe had brought, with another witch, deſtruction on a ſmall bark and its crew, they threw a piece of ſpongy wood faſtened to a ſtone into the ſea, and openly darted on it. Another added, on her part, that ſhe, blowing into a pipe in the name of the devil, not only overturned a boat, in which were two young men, but, accompanied by three other witches, had brought deſtruction on a veſſel; for which purpoſe the one aſſumed the figure of an eagle, the ſecond of a ſwan, the third of a crow, and ſhe herſelf of a dove, and all ſitting in the bottom of a tub, were carried over the ſea from Vaſoea to Domen, a rock ſo called, diſtant from Vaſoe the ſpace of a few miles, where leaving their ſhip, or rather the bottom of their tub, they fled aloft, and then untying the knots they exclaimed, Wind, in the name of the devil: when this was done they fled to the ſea, and did not ſtop until they came up with the veſſel they doomed to deſtruction; on which, in the above-mentioned ſhape, they all perched, one on the helm, two on the hatches, and one in the hold. Another confeſſed that ſhe had deſtroyed a veſſel that looſed anchor, and put into a creek, on ſtreſs of weather; for that on its putting out a little to ſea, ſhe approached it in the ſhape of a ſea-dog and overſet it. Another related that ſhe, by putting two egg-ſhells into a caſk filled with water, could take away the lives of men; ſhe added, that a boat, in which were ſailors, periſhed on twirling round the ſhells of the ſaid egg.

As theſe ſorcereſſes pretended by various methods to call up bad weather, and thereby deſtroy men at ſea, ſo they ſpread abroad alſo that by one ſuperſtitious ſpell or another, inſtilled into them in their commerce with Satan, and by ſome fatal contrivance they could bring on men diſorders, that they could maim them, nay more, deprive them of life; one time by a draft of butter-milk mingled with herbs and earth, over which they repeated the Lord's Prayer; another by a draught of beer, in which was an active demon, with whom they were in underſtanding: now by a charmed piece of cloth of linen, interwoven with a black piece of woollen, which they had concealed in a hole in the wall; at another time, by mixing the meat of the perſon whoſe deſtruction they aimed at with a certain matter, not unlike ſea-weed; and laſtly, by ſpitting three times on a knife, and anointing the victims with that ſpittle. A witch confeſſed that the devil, with whom ſhe was leagued, was gone to Vardoe in the ſhape of a bird, called Strand-Erle, promiſing that he would take her to Bergen: that ſhe ſhould kill by her art a man, who lived at Sandvig, whom ſhe hated.

Another woman was accuſed of witchcraft, practiſed on a poor girl, after this manner: ſhe turned her ſon into a cat, and made him roll himſelf before the girl, drawing a ſledge of ſand. The girl ſtruck him ſeveral times when he got in, and killed him at laſt with the inſtrument in her hand. On her return ſhe paſſed by the houſe of the ſaid woman, when ſhe came out and addreſſed her in theſe words: You have killed my ſon; may it be ill with you. Soon after the girl was diſtracted and died.

Witches related various modes of tormenting cattle: one time they ſat on the back of the poor animal, ſaying, Go, get away: giving him a little corn, they ſaid, Eat and be accurſed: another time they brought the poor animal what is called the ſalt of envy.

Another

Another fooliſhly related that ſhe had given a little wool to her familiar friend, mixed with corn, to take to a cow; and added, that the cow, on receiving this medicine, burſt on the laying on of her hand, and that the wool after her death was found in a large opening in the fleſhy part of the thigh, without once hurting the fleſh. Another ſaid, that ſhe had got milk from the cows of other people by applying a horn to their belly, and by milking them in another's name; the effect of this was that the cow firſt gave milk, then blood, and expired.

As ſorcereſſes have feigned that they can injure man and beaſt by their magic, ſo alſo have they aſſerted that they can reſtore not only man, by the putting on of their hand three times, by fumigating with a lighted ſponge the inſide garment of a man, but alſo that they can reſtore cattle. And for this purpoſe, on the Lord's Day, they bring into the church with them ſome ſalt, when the herds do not fatten, and run over ſome reproachful and very ridiculous lines, when the milk fails in the cattle, the argument of which is not worth reciting.

Witches have aſcribed to themſelves, in their traditions, a variety of other ridiculous facts. One has ſaid, 1. That ſhe gave a ſpongy piece of wood to a young man, faſtened to a ſtone, with this injunction, that whenever a huge wave attacked him, caſting that into the ſea, he ſhould invoke her three times by name, and that the wave would bring him no harm. 2. That ſhe had given to certain young men a drink made up of ſea-water, of ſmall beer, of whey, of river water, and of ginger, to prevent their dying at ſea; that this was not to be drunk, but taken with a ſpoon, if it was to effect the purpoſe intended. 3. That ſhe had given to a young man a linen thread, to another a woollen thread, to be faſtened to the hook, promiſing them good fortune in fiſhing. Another feigned that ſhe had croſſed the ſea from Vaſoe to Kiberg, carried on broomſticks, the other who accompanied her riding on a black ſheep. Another ſaid that with other witches, by magic art, ſhe had driven the fiſhes from the ſhore. At this inhuman work one exhibited herſelf in the form of a great fiſh, called *Storje*; another, in her own form, was covered with a black plate on the breaſt, a veil made out of a certain ſky-coloured cloth, with a red mitre, adorned with golden taſſels, and a white collar, and ſeated on the ſea, and covered with ſea-weed; ſhe held one in her hand, called *Tare-leg*, which approached to the likeneſs of a horſe-whip, by which ſhe drove away the fiſh. Another ſaid that ſhe, in the likeneſs of a whale, did the ſame. Another witch lyingly related that ſhe, walking on the ſea, could collect the liver of fiſh in a bucket, which ſhe held in her hand. Another ſaid that ſhe could transform herſelf into a cat, for which purpoſe an evil genius would procure for her the blood of that animal, with which ſhe would beſmear herſelf, and her ſkin for a covering. Of another it was related, that ſhe had granted a ſhelter to a cat at her door, in a tub, who brought her whatever ſhe wanted from any place ſhe was ſent to. Another was accuſed of having a green cat, called *Smor-Kat*, who fetched her from the pantry of others whatever ſhe was in want of.

Even in our times there is a rumour among the common people, that ſorcereſſes had choſen various places deſtined for their meetings, which they called Bal-Volde; ſuch were Lyderhorn, a mountain ſo called at Bergen; the Bald-Vold, in Vardoe, in eaſtern Finmark; the Bald-Vold, in a place called Omgang, in eaſtern Finmark alſo, the ſame mountain, ſituated in the ſame region; Domen mountain, and Doffre, the ſouthern part extending to Chriſtiana, and the northern to the dioceſe of Drontheim, the Mount Hecla, in Iceland. In thoſe places, at certain times of the year, eſpecially on the feaſt of the Nativity of Chriſt, and the feaſt on the eve of St. John, ſixty and upwards are ſaid to aſſemble in the ſhape of dogs, cats, wolves, crows, and other animals, when drinking together ſtrong beer, water, and honey, they divert themſelves in the dance and in play. What more—

having

having gone to this degree of folly, they have feigned that the evil genius has one time played upon a lute; another time on an inſtrument called in Norway, Langſpil; then on the flute; then on a tabor; and on an inſtrument commonly called Luur, which is an inſtrument of nine inches in length, covered with the thin bark of the linden-tree, which the peaſants, on feeding their flocks in ſummer, are accuſtomed to play on, as well for their own recreation, as to keep away from their herds the bears and other wild beaſts. Nor indeed have they ſcrupled to aſſert that Satan himſelf had danced with them, and played ſometimes at cards.

A certain one told that when ſhe and other witches were aſſembled on the eve of the feſtival of Chriſt, the evil ſpirit had danced with them (what the dance was, Poliſh or Engliſh, I know not), when one of the witches loſt her ſhoe, and the maſter of the ceremonies, by good fortune, put another in its place. Another ſaid that ſhe, together with other witches, was in hell (a thing horrid and ridiculous), in order to render the ſcene familiar to them, where an immenſe boiling lake was to be ſeen, in which were many men; ſhe added beſides, that the devil had an iron pipe, from which he breathed out fire, and that he had drawn out a piece of bacon, put into the ſame lake, which was dreſſed in an inſtant; ſhe inſinuated that the ſaid lake was in a valley. Of her accompanying friends ſhe related, that one put on the likeneſs of a cormorant (commonly called *Krykke*); another of a marine bird, called *Havelde*; another of a dove; another of a dark bird, called *Skarv*; others of jackdaws; and that ſhe herſelf put on the form of a crow. Another ſaid, that being at a certain place with another witch, called *Hildere*, they drank from two garters, from the one of water and honey, from the other ſtrong beer.

As thoſe witches related, it ſeems they could be in an inſtant of time, from their intimate commerce with the devil, day or night one hundred miles diſtant from the place they were in by his guidance. As a certain one ſaid, that a certain perſon, living at Bergen, came to her in the ſhape of a dog, and that ſhe took him to the Bald-Vold, which is in Vardoe, in the eaſtern Finmark, in an inſtant of time.

As they related, Satan appeared to them under a variety of unuſual and moſt horrible appearances: one time like a black man, without a head; at another like a tall man, clothed in black, and a horned forehead; now as a rough and horned man, and afterwards as a black man, whoſe knees were horned, his hands and feet defended with nails, and his hair and beard black: another time he took the ſhape of a man with large and burning eyes, his hands black and covered with hair, and with a flame of fire coming from his mouth; then in the likeneſs of a cat, handling them from their feet to their mouth, and counting their teeth; and laſtly, in the ſhape of a dog, a little bird, and a crow.

On their relation, the devil, when they are dedicating themſelves to his ſervice, impreſſes on them a certain ſign, as on his ſlaves: he is ſaid to have laid hold of the arm of one in ſuch a manner that blood would flow from it; to have bitten the left arm of another; to have marked the left thigh with his nails to a third, and to have torn the left knee of a fourth with his talons.

That they ſhould be more ready and eaſy to enter into league and amity with him, he aſſigns various innocent and agreeable names, as they ſay; ſuch as Chriſtian, Chriſtopher, Jacob, Zacharias, Peter, Samuel, Mark, Angel of Light, Dominic, Abraham, Iſaac, John, Martin, Olaus, Giermund, Aſmodus, Fruſius, Peace, and Saclumbus.

It is true that all theſe and more the witches had confeſſed on trial, and to this confeſſion they were properly brought at the ſtake; but their witchcraft for the greateſt part conſiſted, in my opinion, in fancy, in imaginings, and in dreams. It is even pro-

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bable that their confeſſion was extorted from them, partly by violence and fear; for it appears from the ancient law-books, or memoirs of Finmark, among which theſe matters are related by the law-clerks, that ſome have been put to the torture before they would confeſs: but that the magic art was formerly exerciſed I am not diſpoſed to deny, when the devil is ſo powerful among unbelievers; and who would deny what the ſacred page teſtifies by precept and example? all hitherto related belongs to the witchcraft of the Norwegians. I ſhall now enter and touch on certain rites of the Laplanders themſelves, which they preſerve in their practice of the magic art.

As to what relates to their tabors or drums, Runic words, a certain writer has impoſed that name upon them, calling to mind that they were ſtruck with a hammer. Runic drums of this ſort, as well as I can recollect, reſemble a kind of large box, of an oval form, yet differing ſomething in that reſpect from the ſhape of common boxes: 1. that underneath they are open, different from thoſe which in the lower part of them are cloſed and ſolid; beſides, they have within a various aſſortment of thongs, which hang down, affixed at one of their extremities to the upper part of the drum, and laden with brazen rings and other ſuch like baubles, given the owners by their friends, for the ſake of greater ornament, and perhaps that by the ſound and jingle of the rings the greater noiſe ſhould be excited. 2. That as the common boxes are made to open and ſhut, and are covered with lids that move on hinges, Runic drums are found covered with a very extended ſkin, after the manner of common drums. On the outſide of the parchment are painted various characters, on the bark of the alder-tree, of which ſome are to ſignify the deity; ſome *Radien*, or chief god, Jupiter, of the Pagan Laplanders; ſome the angels; ſome evil ſpirits; ſome *Noaaide-Gadze*, or the aſſociates of the magician; ſome the ſun; ſome Phoſphorus, and the evening ſtar; ſome temples; ſome the habitations of the Norwegian people; ſome Paſſe-Varek, or ſacred mountains, where ſacrifices were offered; ſome the habitations of the Laplanders themſelves; ſome ſmall ſheds, propped on pillars, which are uſually erected at a diſtance from cottages in the woods and mountains, adapted for putting up their ſtores; ſome the folds, within which the rein-deer in ſummer are brought to the milk-pail; ſome birds; ſome fiſhes; and others to repreſent bears and foxes, yet with ſome difference. Some of theſe characters are of happy omen, others unlucky and inauſpicious: to the one the evil ſpirit and wolf are uſually applied; to the other god the angel, *Noaaide-Gadze*, the bear, fox, &c.

The Laplanders, preparing for a longer journey, for hunting, and other matters of greater account, before they enter on it, uſually conſulted their Runic drums, in the following manner: A large ring was put on the ſkin, by which the upper part of the drum was covered, deſtined for this very uſe: the drum was then ſtruck with a ſmall hammer, made from rein-deer's horn, called in the Lapland *Ballem*, by which blow the ring was moved freely, but fortuitouſly, to different characters drawn on the ſurface of the ſkin, lucky or unlucky; whence an omen of the event of the undertaking was decided on. If the ring, by the blow of the wizard, followed the courſe of the ſun, it augured the favourable event of what was taken in hand; but if it went againſt the courſe of the ſun, a doubt then aroſe of the proſperous event of it. Whether a ſick man ſhould die, or recover, they even imagined they could diſcover by Runic drums: the tree from which they were made ſhould be at a diſtance from a place never viſited by the rays of the ſun, and removed from all other trees as far as poſſible. Runic drums were not thought ſufficiently fit for their uſes, unleſs got by inheritance. The wizard kept his Runic drum, as a ſecret not to be revealed, covered and rolled up in fillets or bandages, leſt it ſhould be expoſed to the eyes of every one: the women were not permitted to touch them. Scheffer has given of theſe drums a tedious deſcription.

Through Norland, and among the Laplanders, who inhabit the Sneaaſen mountains, the Overhaldens, the Meragrians, the Tydalens, and other places in the government of Drontheim Runic drums in great numbers have been found. I have given a kind of one, which a certain Laplander of the mountain of Meragrian, in the pariſh of Stordal, poſſeſſed, delineated and engraved. In Finmark, eſpecially in that tract of country I firſt went into on my miſſion, Runic drums, as uſually called, were ſeldom uſed, as far as I know, as they ſubſtituted in their place the covers of boxes and bowl diſhes, laid over with various colours.

Yet traces of them in that country have been found; with a Lapland of Finmark one was diſcovered of the following kind: it was made from fir-tree, like a large hollow crater or bowl; the bottom was bored through with two oval apertures, and at each extremity, and a fox's claws were fixed, the upper part of it being covered, like a drum, with a ſkin, which was diſtinguiſhed with paint from the boiled bark of elm, the colour of which is a light red, by four lines, into five different compartments, in each of which, between the lines, were ſeen figures expreſſive each of their own peculiar omen.

In the Firſt Compartment,

1. Was the figure of a man, called *Ilmaris*, who was thought to excite bad weather.

2. The image of a man called *Diermes*, which name ſignifies thunder; he, invoked by prayer, by divine will, as the Laplanders explained it, could produce fair weather and a ſerene ſky.

A kind of animal called *Godde*, which ſignifies wild rein-deer. When the Runic was ſtruck on, and the ring did not go to the image of this animal, it was a ſign, that he who conſulted the inſtrument on his proſperous ſucceſs in hunting the rein-deer had loſt his time.

On the Second Compartment;

1. The circle through which the croſs line was drawn, whoſe name is *Beive*, which ſignifies the ſun: this was thought to produce fine weather.

2. The image of a man, *Ibmel Barne*, that is, Son of God; this was thought to free perſons from ſin.

3. The image *Ibmel Atzhie*, that is, God the Father; this was believed to puniſh evil and to procure remiſſion of ſins; Chriſtian death and ſalvation of ſoul.

4. The image of the ſacred place of worſhip, which they called a cathedral temple, adding, that they there implored the good and ſalvation of the ſoul.

5. The image of a man, repreſenting the Holy Spirit, to which the name of angel was put: he was believed to free from ſin, to renovate man, that he ſhould turn out a new creature; thus, by theſe three figures were repreſented the three perſons of the Divinity. By each image, or picture, repreſenting the human form, a ſtick, *Junkar-Sobbe*, that is, the ſtick of a noble youth, was ſeen painted; the reaſon of this was, as the rulers of the earth hold in their hand a ſtick, ſo the ſame was a ſuitable emblem for theſe.

On the Third Compartment,

An image of a female was ſeen, repreſenting the ſiſter of Mary; whom, for that opinion of her was always conſulted for aid and ſuccour by child-bearing women.

2. The image of a woman, *Maria Ibmel Aedne*, that is, Mary the mother of God; ſhe was principally thought to be ſubſervient to child-bearing women, and the remiſſion of ſins.

3. Three images, *Joulo-Beive-Herak*, that is, the lords of the feſtival of the Nativity of Chriſt; firſt, *Vuoſtes Joulo-Beive-Herra*, that is, lord of the firſt feaſt; ſecondly, *Nubbe Juolo-Beive Herra;* that is, lord of the ſecond feaſt; and thirdly *Goaal-Mad*

Joulo-Beive Herra, that is, lord of the third feaſt. It was a belief, that he who profaned theſe days was puniſhed by the Deity; but if, theſe days being duly celebrated, any one ſhould aſk any thing from the Deity, and, during their celebration ſhould put himſelf before the Deity, that, moved by this ſupplication, he would hear and aſſiſt him.

On the Fourth Compartment,

1. Was ſeen the circle *Mano*, that is, the moon; from it, it was uſual to implore fine weather and ſerene nights.

2. The images of two men, called *Munne Olmuk*, that is, as to the letter of the expreſſion, men travelling; but, as to the ſenſe or meaning, men going to church.

3. The image of a temple, to repreſent that which the prieſt frequents. To it he is repreſented as confeſſing that he and others are vowing and offering tapers, money, and other things, that aid and ſuccour may be given to him on one misfortune and another; and that he dedicates thoſe things to the paſtor of the ſaid place, which is expreſſed by this painted building.

4. The image of a man ſtanding near the temple, to ſignify, as it was expreſſed, a man going to the place of worſhip.

On the Fifth Compartment,

1. The image of a woman, to denote, as it explains itſelf, the wife of a bound demon. The name is not known.

2. The image of a man a little below the one placed before it, to ſignify by interpretation the devil killing men, and is called Diſeaſe.

3. The image of another man, which is ſaid to be the devil freely ranging about in hell and the upper air. A fooliſh opinion is cheriſhed that this devil has eſcaped from the one that is bound faſt, but the name of him is not known.

4. The figure | | | on the ſkin of the Runic has been interpreted, *Helvet-dola*, that is, hell fire, in which ſouls are thought to be burnt.

5. This figure ◯ *Helvet Tarve-Geune*, is ſaid to ſignify the pitchy cauldron of hell, in which it is thought ſouls are boiled.

6. This figure ▭ to ſignify *Helvet-Haude*, that is, the ſepulchre of hell, into which all believing in Satan are ſaid to be thrown.

7. The figure of a man, from whoſe neck a line was drawn to the column, to ſignify a bound devil, of whom mention was made above, to ſignify that there was an opinion, that from the creation of the world he was held faſt in chains by the Deity.

For the purpoſe of this Runic drum the owner was provided with two Runic hammers, made from the horns of the rein-deer, called *Zhioaarve-Vetzhjerak*, horn hammers, with the one of which he is ſaid to have ſtruck the drum. Beſides he had a ſmall cover made of braſs, to the upper part of which was fixed a brazen ring; with this when going to exerciſe his art, he covered the ſkin of the drum, and proceeded thus: After raiſing up the Runic inſtrument, he vibrated it on this ſide and that, and, holding it in one hand, he ſtruck with a hammer he held in the other the ſkin it was covered with. He then obſerved if this cover of braſs, when the ſkin was ſtruck with the hammer, ſhould turn againſt the courſe of the ſun, that fortune would be unfavourable to him in whoſe behalf the Runic cymbal was ſtruck; and if, in its deſcent, it ſhould not ſtop until it had touched one of the figures which were marked below the third line in the third compartment, that the Deity exceſſively angry with him for whom it was ſtruck, declared by this ſign, that he was a great ſinner, and that the Deity ſhould be moſt humbly invoked, if he wiſhed the cover ſhould recede; but ſhould it follow

follow the courſe of the ſun, it was a ſign that he in whoſe behalf the drum was ſtruck, enjoyed good fortune.

But he ſaid that he when going to uſe this drum marked himſelf and it with the ſign of the croſs, as an earneſt of good ſucceſs, ſubjoining the Lord's prayer, and theſe words: *Ibmel Atzhje Barne ja Engel vækjet don*, which ſignify, God the Father, Son, and Holy Ghoſt, aſſiſt me, (I never perceived that the Laplanders called the Holy Ghoſt, angel, but in all countries known to me they call it *Paſſe Vuoign*). To theſe prayers he added more words, and on ſtriking with a hammer the ſkin of the drum, he ſet in motion the braſs cover on this ſide and that. In the midſt of the work, he broke out into theſe words; Thou, O God, who haſt created the heaven and the earth, the ſun, the moon, the ſtars, and all men, the birds, and fiſhes of the ſea, I am a man liable to error, old, and unworthy; it is better that I ſhould die than that you ſhould deny your help to him in whoſe behalf we intreat you; where it is to be obſerved that the Laplanders, ſpeaking in the Daniſh language, uſe the firſt perſon plural, we, for the firſt perſon ſingular, I.

Another Laplander of Finmark gave this explication of his Runic drum. The talons of all animals which that country produces, were ſuſpended from it on every ſide; and on the ſkin covering the upper part of it, nine lines were painted from elm bark, each having its own omen. He alſo added, when going to exhibit, that he placed a copper bird ſurrounded with little bits of braſs on the ſkin of it, and ſtruck it with a horn hammer, covered with beaver's ſkin. By this impulſe, the bird turned itſelf to the lucky or unlucky figures. He ſaid, if this copper bird, when the ſkin of the Runic inſtrument was ſtruck with the hammer, fell from it to the earth, that it was a ſign that the ſame perſon would ſoon die. He further added, that when two wizards, called *Noaads*, wiſhed to know, which excelled the other in the magic, that they painted two rein-deer ſtriking each other with their horns, on a Runic drum. The ſignification was, that he whoſe rein-deer had the victory was the better wizard.

There were among the magicians or *Noaads*, who openly pretended that they were both able and willing to do injury to men and alſo to cattle. Theſe, as we ſhall ſuppoſe, were dreaded more than dog or ſerpent. When ſuch a perſon was going to practiſe his art, he ate wolves' fleſh, or fox's, before he began, from a perſuaſion that he drew no ſmall degree of ſtrength and power from it.

Others, on the other hand, confeſſed, that they could cure various diſeaſes, give their fiſhing and hunting parties ſignal ſucceſs, and, of their own free will, confer the greateſt poſſible benefits on thoſe that ſtood in need of them, whence it is no wonder, that they were held in high eſtimation by the Laplanders, and celebrated by great praiſes.

The magician, whenever called to the aſſiſtance of a ſick perſon, conducted himſelf in the following manner, as the Laplanders relate: He thus ſpoke to the *Noaaid-Lodde*, or his magic bird, *Haette dal Kotzhio duu'matkai*, that is, neceſſity compels you to undertake a journey; on which words he ſolemnly ſent the ſaid bird to the *Noaaid-Gadze*, that is, the partnerſhip of the magician, or certain ſpirits addicted and bound to the attendance of the magician, when come to him. Two colleges, the one viſible the other inviſible, were inſtituted for the *Noaaid-Gadze*, or ſociety of the magician aſſembled by the miniſtry of the ſaid bird. The council which was called inviſible, conſiſted of the magician and two women, adorned with a linen hood and all the reſt of a religious dreſs, except the girdle. Theſe women were called *Shjarak*. To theſe members were added others; a man without a hood and girdle, and a girl not as yet adult. The man

in his office was called *Mærro-Oaave*. The magician had collected all theſe members in that place where they tried the cure of the ſick man. At the inviſible aſſembly (ſo called, becauſe viſible to the magician alone,) *Aarja* preſided, the *Noaaid-Gadze*, the companions of the magician as well as the two women, which the *Aarja* added to this inviſible college ſitting together with him. Women choſen into this inviſible college were called *Rudok*.

Each college, viſible and inviſible, duly called and provided, the magician prepared himſelf for his journey, that will be deſcribed more at large by us, who; that he might act agreeably to the rules of his art, after uncovering his head, and looſing his girdle and latchets, covered his face with his hands, and twirled round his whole frame into a variety of circles, with wondrous and ſtrange geſtures, adding theſe words, *Valmaſhſtet Haerge ! Satzhja let Vaanas !* Let the rein-deer be got ready, and prepare the boat, he ſaid, and ſnatching up an axe, he dragged the burning pieces of fire with his bare hands from the grate, aſſerting with confidence, that he had nothing to fear in this ſtate from raging flame. Then, taking no ſmall draught of brandy, he ſtruck his knees, not ſlightly, with the ſaid axe, and, raiſing it up with both his hands, he brandiſhed it three times around each of the women *Shjarak*. During this time no one was permitted to touch him, not even a fly, which they drove off with the greateſt care. When he had gone through theſe ridiculous, and almoſt furious, geſtures and ceremonies, he ſtretched himſelf, like a dead man, on the ground, under which deſertion of mind or trance, as it ſeemed, made up of body and mind, he lay; that while his body lay in the cot, to be viewed by all, his mind, if you believe the Laplanders, through ſome ſubterranean paſſage, when all ſenſe for the time was ſhut up, ſhould view the *Paſſe-Varek*, or ſacred mountains, with their inhabiting gods, and hear the ſongs, called in the Lapland *Luodiit*, which were uſually ſung in the inviſible college in this trance. During this time the aforementioned women, *Shjarak*, were ſeated in the tent, adorned with all their dreſs, diſcourſing in a low voice (a diſcourſe of this kind was called in Lapland *Monataebme*), as aſking each other what part of the world now held our magician; one part or other of the ſacred mountain being conſtantly mentioned by them. If it happens that the women in their converſation ſhould have fallen on the name of the mountain in which the magician, when the ecſtacy is over, has aſſerted he has been taken, on the bare mention of it he ſeemed in the trance to them, to move his hand or foot. Mean time continuing their diſcourſe, they go on to aſk, whether in that place, in which he has been taken up, he either ſees or hears? The magician, when at length he returns to himſelf, utters, in a low voice, the words which he boaſts he heard uttered in the ſacred college; words ſuch as theſe the Laplanders call *Zaabme*. The women, ſitting together, finding out that the magician is returned to himſelf, began, with a clear and loud voice, to ſing. Theſe and other ſuch diabolical rites and geſtures being completed, the magician, returned to himſelf, ſignified, by clear and open expreſſions, that a ſacrifice is to be made, an animal to be ſlain, at the ſame time naming the place where it was to be done, and interpoſing his faith that the ſick man would recover within a certain and limited ſpace of time; which ſometimes did happen with exactneſs and order, at another time not. For the whole day before the magician entered on this buſineſs, he refrained altogether from meat and drink.

But it appears among all by whom the manners of this nation have been inſpected and examined, that the ſaid women *Shjarak*, had ever been preſent with the magician, when exerciſing his art in the college called viſible as witneſſes of the atchievement: it appears alſo that the magician had uſed in this act ceremonies and geſtures, ſuch as looſening

ing of his girdle and latchets: his ſtriking his knee with the axe; his taking burning logs from the fire, &c.; and laſtly his proſtrating himſelf on the ground like to a dead man. It is alſo beyond doubt, that the ſaid women during the act had muttered to one another, and that the magician in his trance had began to move hand and foot a little to their diſcourſe, and ſoon after the office of his ſenſes returning, that he had uttered in a ſubdued tone of voice the words Vuolet-Zaabme, and that when at length coming to himſelf, he had adviſed and commanded a victim for the reſtoration of the ſick man. All this is ſo correct and true as to admit of no doubt; but the remaining part I ſubmit to the underſtandings and belief of the judicious reader.

Paſſe Varek or ſacred mountains will ſeem wonderful to no one when mentioned on this occaſion. That there were ſuch in this country, honored with divine worſhip, beſides many other places of ſacrifice is plain from the idolatrous worſhip of the Laplanders, and from the traces to be met with at this day. I myſelf have been an eye witneſs of them. That the Pagan Laplanders, and eſpecially their miniſters, men inſpired, ſhould have in their minds theſe mountains and their inhabiting gods, is a matter eaſy to be believed. And it may be eaſily alſo inferred that the magician engaged in the cure of the ſick, ſhould have his mind fixed on theſe ſacred heights, by a certain manner of reaſon, ſuiting the thing itſelf. Moreover when the objects that occupy our thoughts when we are awake, lay hold of them when aſleep, it is no wonder, that the magician in this act, which was all done in a deep and profound ſleep, procured by the brandy he had drunk, placed beyond the power of all external objects, ſhould ſee his favorite hills, their gods, and other objects before his ſenſes, and hear them calling for victims for the reſtoration of the ſick. And as all this is the buſineſs of magic, and the invention of the devil, it follows, that the wicked ſpirit is the contriver and adviſer of the councils, and that he has the greater ſhare in directing it.

But this has not been the only practice of medicine among them; that others were practiſed will be manifeſt from the following account. A certain Laplander from Porſanger bay, by name Mellet Olſen, an honeſt man, free from guile, told me a ſtory of two other of his countrymen, that when going to practiſe medicine, made uſe of the following method. On the eve of Chriſtmas, they ſlew a young rein-deer, and boiled the meat, certain ſmall pieces of which together with a little butter and cheeſe, and a few cakes they put in a ſmall ſkiff fabricated for that uſe. Having prepared, in this manner a ſacrifice, they piled up a great heap of wood, on which they placed the ſaid ſkiff, juſt mentioned, with the ſacrifice itſelf, in order to remain there during the feſtival. When the feaſt was over the ſkiff was looked for on the pile, but no where found; while Mellet ſeriouſly affirmed, that no body knew what had happened or where it was put; yet there is no doubt but the ſacrifices placed in the ſkiff, were offered to *Joulo Gadze*, or to the company of Yules. The ſame Mellet Olſen related to me a ſtory of another of his countrymen, an inhabitant of the ſame bay, that when about to take ſick perſons under his care he was accuſtomed to attempt the buſineſs in this way. Brought in his boat gradually and ſlowly near the ſhore, where there was the moſt convenient landing, he put in, and getting on the main land, he brought a ſtone of no moderate ſize to the boat, and ſpoke to it, after turning it round and round, often in words which Mellet apologized to me for ſuffering to eſcape his memory. On his return home he brought the ſaid ſtone with him, and placed it under his pillow, and often addreſſed it, drawn from under his head, in the ſame form of words.

The *Gan* fly is beſides numbered among their magic inſtruments moſt remarkable, wherever it is known, as an inſtrument of injuring. The Laplanders contend that they were flies, but you would ſay that they were evil ſpirits, under the name of flies.

They

They add that the ſons receive them from their wizard parents, and that the evil ſpirit, on the failure of theſe furniſhes new ones, under the appearance of a horrid and deformed bird. They mention too, that they are kept in a certain box commonly called *Gan-Eſke*, to be forth-coming, equally to injure man and beaſt, at a ſeaſonable moment, and that the manner of exerciſing this execrable art, conſiſts chiefly in this, that when the wizard orders his flies to fly out from his box, an injury is done to this or that enemy, by whom he contends an injury has been done at one time or other to him, yet with this due caution, that like be done for like, and that the revenge does not extend a nail's breadth beyond the injury received. The flies, on receiving the order, inſtantly fly out, and diſcharging their orders, return again each into his own box.

Should a ſwelling appear, not unlike the figure of a flounder, (called in the Norwegian *Flynder*) between the fleſh and ſkin as ſomething alive, moving this way and that, it is a ſign of the hurt received from the contact of the flies. Such a ſymptom was formerly not unuſual among the Laplanders. Beſides, did the belly ſwell, did blood flow from the mouth and noſe, ſudden death ſucceeding, no doubt there remained but that the man, labouring under ſuch ſymptoms, was ſeized by poiſoned flies. He who was ſo infected, and was ignorant of the magic art, ſo as not to be able to recall his former health, implored aſſiſtance from another, who was thought able to repel the malady by the ſame means it was brought on. There was a magician, who was ſtruck by the fly of another, is ſaid to have cured himſelf. The degree of belief attached to theſe ſtories, is great with the Laplanders, from whoſe mouth I relate what I have heard from them.

A certain writer mentions that the Laplanders take vengeance on their enemies by ſmall ſhort leaden arrows, which, infected with poiſon, they ſhoot very far bringing various and dangerous maladies on them by this means, which turn in the arms and legs, into cancers and other ſuch ills.

The *Juoigen* ſignifies ſong, which ſome of the Laplanders uſually ſing by intervals, but ſo confuſed and broken that it bears more likeneſs to a howling than to an articulate voice. There are Laplanders, who innocently and ſolely for amuſement ſing their Juoigen, theſe are named Maargos; but the Juoigen of others is altogether ſuperſtitious, thinking they can keep off the wolves from moleſting the cattle, by ſuch a ſong, and that they can drive them away altogether, which can be gathered from the following verſe, they are uſed now and then to ſing. *Kumpi! don ednak vahag lek dakkam, &c.* Wolf begone, author of many ills, here you ſhall no longer ſtay: hence begone to the extreme parts of the world, or mean time you ſhall be transfixed with arrows, or you ſhall periſh by ſome other means. Some magicians ſing as well in the exerciſe of their art as out of it; others never. Theſe are called *Judakas* and *Juraak* in common.

The magician when called on to recover things ſtolen from their owners, is ſaid to proceed in this manner. He poured brandy into a bowl; and inſpected the liquor, ſhewing the face of the perſon who looked into it, calling by name one or another whom he ſuſpected of the theft. And as the liquor returned the countenance as a mirror, the very cunning juggler pretended that he ſaw the image of the thief in the liquor, and openly charged him with the theft, adding threats that he himſelf, unleſs he returned the property ſtolen, would knock out his eye, or maim ſome member of his body. On which the thief, dreading the effects, leſt he ſhould be deprived of an eye, or mutilated in any of his limbs, reſtored what he had ſtolen without delay to his maſter. The magician intent on the liquid, uſually repeated ſome ſolemn hymn.

Thoſe

Thoſe of the Laplanders, who were detected in theſe nefarious practices, were not admitted to the church, and the participation of ſacraments, without previous confeſſion and public abſolution, while Von Weſten, the vicar, was living: a man who merited the greateſt praiſe from the church, but who has immortalized himſelf, from his inſtruction and converſion of the Laplanders.

CHAP. XXII.—*On the various Superſtitions of the Laplanders.*

THAT the Laplanders were formerly addicted to a variety of ſuperſtitions is ſufficiently well known. With ſome Thurſday was kept holy; at leaſt it was thought impious to handle wool on that day. Almoſt all held Saturday, ſome Friday as holidays, calling this latter *Faſto-Beive*, that is the day of faſting above the reſt.

A maritime Laplander of the name of Peter Peterſon, dwelling in one of the bays of weſt Finmark, and pariſh of Kielvig, commonly called Smorfiord, told me that when he once went out to hunt hares on a Saturday, and was from fatigue ſeated on the ground, that a ſpectre with a human viſage and dark garment, appeared to him, aſking him what he did there, and on his anſwering that he came to hunt hares, which he intended to give to his prieſt, the ſpectre replied, what do you think that hares taken on the Saturday, which ſhould be obſerved with the greateſt veneration, can be acceptable to your prieſt? And then ſubjoined in caution, that he ſhould carefully guard againſt violating Saturday, or any other holy day for the future, by any profane exerciſe. He added that from this profanation of the ancient feſtivals, that the wild beaſts, birds, and fiſhes, abhorring and deteſting the impiety of irreligious men, quitting their haunts, had fled away and haſtened into other countries. That the ſame ſpectre, which hitherto preſented itſelf in ragged garments, had ſoon after appeared to him in a more ſumptuous habit, addreſſing him in words of this kind: you will ſacrifice a cow to me, when this is done, the ſea, the air, and earth will bring forth again fiſhes, fowl, and beaſts. When this converſation was ended, the Laplander, you will ſuppoſe in conſternation and diſorder, returned home, ſat a little, but ſoon drew his knife in a rage, and in the midſt of theſe agitations of mind and body fell like to a dying man to the ground. His ſervants faithfully attended on him under this loſs of his underſtanding and ſenſes, ſtriving now and then to awaken him, by ſlight blows, but in vain. Meantime the apparition which appeared to him in hunting, preſented itſelf to him in his viſion, uſing theſe words: you will never recover from this diſeaſe, unleſs you ſacredly promiſe, when you get well, that you will, with due right ſacrifice a cow to me. The unhappy man made this promiſe, and immediately awoke from his trance, but ſo weak that he could not walk; and as he fancied even ſtill to ſee the ſpectre walking up and down before him, he cried out with a loud voice to thoſe preſent to help him, and drive off the ſpectre leſt he ſhould ruſh in upon him. Reſtored at laſt to himſelf, he ſincerely laid open all he ſaw and heard, gravely and ſeverely injoining, that none of his people ſhould attempt to profane the Saturday, or any other day that was ſacred and feſtive. He ended here, and inſtantly recited the Lord's Prayer, and part of the catechiſm. On the next day, this ſaid Laplander was viſited by a great many who had accidentally heard theſe matters, to whom he gave a ſincere explanation of all that happened to him, and attempted to perſuade them to bring back and reſtore Saturday, and all the other feſtivals of old, which through time were brought into diſuſe, and ſhould for that purpoſe ſacrifice lambs in order that the former plenty with which the country abounded ſhould be reſtored. Some obeyed his monitions, while others took the whole viſion for a mere illuſion and juggle of the malign ſpirit.

For my part, what to think of this viſion, whether it may be true or falſe, I leave to perſons of reflection to determine. This at leaſt I can ſuggeſt, that the Laplander to whom it happened was a ſimple and honeſt man, free from fraud of any kind. Beſides, when it is remembered that the infernal ſpirit can change himſelf into a thouſand forms, it was eaſy for him, who did not ſcruple to tempt the ſon of God, in whom were hidden ſuch treaſures of wiſdom, thus to attempt and circumvent with his wiles, a poor ſimple man, incredibly weak and helpleſs in himſelf, that he might lead him with others out of the true way to his deſtruction.

It was a cuſtom with them ſolemnly to keep the Nativity of Chriſt, and the ſacred days of the holy Virgin. A Laplander of the coaſt from a bay in the pariſh of Alten, called *Lerrets-Fiorden*, of the name of Andrew Peterſon related a certain object had preſented itſelf to him, when once he was bringing a load of hay, from the ſhed called Loaawe, on which we treated more at large in another place, as fodder for the cattle, on which according to the old ſtyle the Chriſtmas was to be celebrated. The ſtory is thus. When overcome with fatigue, the Laplander had ſat down on his way, he heard a hiſſing noiſe three times repeated, on which in diſmay he exclaimed, O God come to my aſſiſtance I pray you! He roſe inſtantly on this, and laying aſide, or diſſembling his fears, he haſtened home, but on his way addreſſed by a clear ſhrill voice; ſtop friend, I wiſh to ſpeak a few words with you, on which he ſtopped, and turning about he perceived a figure oppoſite to him of human ſhape, in a ſplendid dreſs ſeverely reproving him, becauſe on that day, on which the feſtival of Chriſt had fallen, he was not aſhamed to undertake ſuch a buſineſs, ſeriouſly affirming himſelf to be the meſſenger of God, ſent from heaven for this purpoſe, to inſtruct him and others, that the Nativity of Chriſt, and other holydays old ſtile, were to be kept holy, and that the innovation of violating this, as well as other feſtivals was raſhly introduced, and that ſuch an inſtitution was merely human, and therefore of no authority and obligation: that Thurſday from twelve o'clock to evening, and alſo Saturday were to be religiouſly obſerved, and that the reaſon of the diſtreſs of grain, and other calamities with which men are afflicted, is chiefly to be found in that irreligious profanation of ancient feſtivals. He ſpoke and inſtantly diſappeared in air. The Laplander haſtened home as faſt as he could, but before he came there his ſpeech failed him, and he fell as if lifeleſs to the ground, and no doubt would have died in that ſituation, had not ſome perſons been at hand, who ſeeing the danger of the man, took him home to his cot, after lifting him up juſt dead in their arms. After remaining ſome time in this ſtate he awoke, related what happened, and ſeriouſly admoniſhed his friends, according to the mandate of the angel who appeared to him, to be obſervant of all the old feſtivals, particularly Thurſdays and Saturdays, all of which ſhould be ſacredly and religiouſly revered. Let the reader make his own reflections on this ſtory as on the former.

The day before Chriſtmas the eating of meat was forbidden. A young Laplander told me that on attempting to eat a piece of meat, that he had taken from off the fire, he was not only reproved by his father, but the meat was taken even out of his mouth by him, after he was ſeverely chaſtiſed for attempting to eat it.

The evenings preceding the birth of the Saviour, and the feaſt of the Virgin Mary old ſtyle, were alſo faſts; the one for the good education of boys, the other in honour of the *Joulo-Gadze*, or aſſembly of the Yules of whom we ſpoke in Chapter XIX., on the gods of the Laplanders. On the birth of Chriſt it was a cuſtom, that the women ſhould pile up boiled meats of various kinds in their aprons, and ſhould carry them to the cow-houſe to be hung up in it for three days, and on the third day to return, ſolemnly to conſume the proviſions they had laid up. It was alſo a cuſtom to ſet food on the ſame day before the crows.

For

For a huſband to lie with his wife under occaſional viſits of illneſs, was accounted wicked; neither was he permitted to touch her cloaths under ſuch a ſituation. It was alſo interdicted to her, while under this illneſs, to walk over the foot of the huſband, which was ſtretched out, as he ſat on the ground; nor was it permitted her either to go over his gun, that was on the ground, or to climb to the top of the hut, or to tread on that part of the ſhore where the fiſhermen uſually expoſed their fiſhes, or to milk the kine. When they recovered, they uſually waſhed their heads in water from the cauldron; which when done, they took care that the cauldron ſhould be cleanſed with bran, and that a cake ſhould be afterwards made in it, which women alone were permitted to eat of.

A woman when with child looks to a certain ſtar which is next to the moon, judging from its nearneſs or remoteneſs, whether the young ſhe carries in her womb ſhould yield to fate, or be born under a happy omen.

To put a handle to an axe in the houſe of a lying-in woman was impious. The Laplanders cautiouſly provided againſt any thing twiſted or knotty in the garments of a perſon under ſuch a ſituation, led by a vain imagination that ſuch knots would render the birth of the woman more difficult. The garments with which ſhe was cloathed when in her labour ſhe ſoon put aſide, never to put on or wear again. She was kept to that part of the hut where ſhe lay-in; nor was ſhe permitted to change until ſhe roſe in a ſtate of health.

The Lapland women, for the moſt part, ſuckle their own children, ſome two years and upwards. They were of opinion, during their ignorance, that the children would enjoy a greater degree of felicity the greater number of faſts, they were ſuckled from the teat.

It was cuſtomary with the Laplanders to name their children according to their dreams. Beſides the names common to the Laplanders with the reſt of the people of Norway, and given them by the prieſt at the time of their baptiſm, as Nicholas, Olaus, Peter, &c. which according to the genius of the Lapland language are differently written and pronounced; as Anders in the Lapland ſounds Anda, or Adda; Svend, that is, Sveno, Spein; Jens, that is, Janus, Junthe; Joſeph, Juks; Lars, that is, Laurentius, Lalla; Nicolaus, Nikke, &c. Some had names given them from a kind of baptiſmal fount at home; as Utze Beivatzh, that is, Little Sun; Quive, Mielze, Akkie, Guia, Nokke, and others of this claſs. For it has been a cuſtom formerly, which is even retained to this day, of which I have been an eye-witneſs, that infants, from the day of their birth to a confirmed age, ſhould be daily waſhed in a warm cauldron; which practice, as it is undertaken ſolely for their health and ſtrength of body, has nothing hurtful in it. If the child is to have any other name than its firſt genuine one, that is given in the firſt waſhing, when the navel-ſtring is looſed from it, in this form of words: *De mon baaſam duu dam Nabmi N. N. ja dam nabmi bunuriſt kalkak aellet*, I waſh thee in the name of N. N., in which you will thrive. During this time ſome one name either of the aforeſaid, or taken from its anceſtors, is given to the infant: the holy water was boiled together with the bark of the alder-tree, and ſprinkled on the infant. When afterwards the child falls ill, or cries more than it ſhould, it is imputed to no other cauſe than becauſe a juſt and genuine name was not given it; and alſo aſſerted, that there was an anceſtor by whoſe name he could be more properly and fitly called. A new waſhing was undertaken, when a new name was acquired, taken from one of his anceſtors; and this is the reaſon why you meet with Laplanders frequently that have two or three names, one of which is given in baptiſm, the reſt in private waſhings. But it would be an eaſy matter to prove by inſtances that there are Laplanders who, beſides the family name given by the

prieſt in baptiſm in the uſual manner, had alſo other names: one example will be ſufficient. When at a place at Porſanger bay, called in the Norwegian Horrigen, in the Lapland Vueppe, there were two young men, one named Nicholas, the other Gunner: whenever theſe ſpoke together, by a cuſtom received in Norway, they addreſſed each other as if named alike, uſing this form, Gaimazhjam, that is, my dear namefake. This ſeemed ſtrange to me at firſt, well knowing the one was named Gunner, and the other Nicholas. The circumſtance explained itſelf, when, in addition to the baptiſmal name, I learned that another, and a different one from it, was given to each in the domeſtic waſhing, namely, Quive, by which they were each double named and namefakes.

When the ceremony of waſhing was over, a certain meat and drink, called in Lapland *Ncaaide Borromuſh* and *Noaude-Jukkamuſh*, that is, magic meat and drink, was prepared for the child, to the intent that he ſhould take in with theſe feaſts the magic art, and that he ſhould be ſolemnly initiated in them. Then a ſolemn feaſt was made for the ſake of him, which when it was ended, they took care that he ſhould be inſtructed in the Juoigen, or that very celebrated ſong, ſo familiar to, and ſo much uſed by, the Laplanders, ſo that the boy before he could ſpeak diſtinctly had maſtered the elements of this rude melody, or if it pleaſes better, this howling. They further taught him, as he advanced in years and underſtanding, the myſteries of the nefarious and diabolic art, and the whole method of idol ſacrifice and worſhip. It was a cuſtom with them to put a piece of ſteel, as a charm againſt any ill, with infants in the cradle.

It was cuſtomary too among them to offer vows up in the temples for the recovery of the ſick, which act was called in the Lapland *Kirkoi Zhjuorvot*, to invoke the temple. Some Laplanders diſcharging this duty, uſually rowed out into the open ſea, and in boats which they turned round three times with the courſe of the ſun, made their ſupplications on their bent knees. They declined being numbered in the regiſters, or telling the amount, leſt a computation of this kind ſhould portend and entail on them the deſtruction and death of their friends. In the coffins of the deceaſed it was their cuſtom to put up food, that they may have wherewith to ſubſiſt on. A deceaſed perſon was laid in the porch of the temple of Alten, on account of the cold, which was at time extreme, and prevented it from being then buried, in order that it ſhould be taken to the grave when the weather would admit. Meantime it happened that ſome curious perſon removing the lid, and looking into the coffin, perceived a ſpoon and a cake of meal baked lying by the ſide of the corpſe. They are alſo ſaid to put up the bow and arrow they uſually uſed when hunting in the coffin with them. The rein-deer which drew the deceaſed to the grave was ſlain as a victim, and when eaten, the bones were interred. When the body was buried, it was uſual to cover with a ſtone that part of the cot where the body lay before ſepulture: and as often as any of the family died, they inſtantly quitted the place and went elſewhere to live.

It was a practice among ſome to hang up a ſheep's bone, wrapt up in hay and wool, in a hay-loft, to protect the cattle, as they ſuperſtitiouſly feigned, againſt the injury and ſeverity of a cold March. To mark the cattle with the ſign of the croſs; to hang on a cow, near the time of parturition, a piece of ſteel to hit againſt, and give good luck to the young, and to mark alſo their front, when juſt born, with the ſign of the croſs, after ſprinkling equally the dam and the young with flour, was cuſtomary among the Laplanders. It was counted impious in the males to feed on the beeſtings of a cow that had juſt calved, unleſs they were ſprinkled with meal.

It ſometimes happens that the rein-deer are ſuddenly carried off by death, for which reaſon the Laplanders, in poſſeſſion to-day of large herds, have in a little time few of them left. They impute ſuch a calamity to the place, and for that reaſon not only quit it,

it, going to another at a conſiderable diſtance from it, but burn all the excrement of the animal before they depart. Women are not permitted to eat the fleſh of the head of the rein-deer. It is not permitted to males or females to eat of the limb of any animal, when they have felt a like pain with it in their own; ſo that ſhould a Laplander happen to be ill in his eyes or back, he ſhould religiouſly abſtain from the eating of the eyes and back of the animal.

The Laplanders to a man refrain moſt obſtinately from eating ſwine's fleſh. If you enquire the cauſe of this abſtinence, they tell you that ſwine are the magicians' horſes. That they are averſe to it in reality I am convinced; but the true cauſe it has not been in my power ever to aſcertain, nor will one eaſily be led to think that they themſelves aſſign the true reaſon. But they call the ſwine *Tazhja-Guouzhja*, that is, the Norman, or Norwegian, bear, doubtleſsly for this reaſon, that this animal, whoſe fleſh the Norwegians ſo eagerly eat, is not much unlike the bear in form.

They have a fancy that beaſts, birds, and fiſh are averſe to the places where ſacred buildings have been raiſed, and for this reaſon very ſeldom attempt hunting in places of this kind, by reaſon of their diſtruſt of ſucceſs. Whenever any of the family went out to fiſh, thoſe who remained at home thought it impious to put a brand in a veſſel filled with water to extinguiſh it, leſt an injury ſhould happen to the fiſhermen. On their return they did not like to ſpread their fiſh on that part of the ſhore which the women frequented, thinking if they did that their ſucceſs would be baulked by it. Whenever a Laplander took a greater flounder, as called, he uſually marked it with the ſign of the croſs, when he took out the hook. It was accounted impious to put the water in which this fiſh was boiled before a ſhe-goat to drink, leſt the abundance and catching ſhould derive any detriment from it.

They are not very willing to call a bear by his proper and genuine name, *Guouzhja*, fearing leſt ſo doing the ſavage beaſt would tear their herds more mercileſsly; they call him then, ſuppreſſing the name *Moedda-Aigja*, the old man with the fur garment.

Bears when killed have been brought home in a kind of triumph. On their return they erected a cot near that in which they reſided, into which they did not enter until they had at firſt ſtript off their cloaths, conſidering it as impious to enter it in the cloaths in which they had killed the bear. The males ſtayed three days here, but the women during that time inhabited the cot: in the meantime no one was permitted to enter the dwelling of another. In the newly-erected cot the males cooked the bear's fleſh; on which occaſion they did not uſe the accuſtomed term *Vuoſhjam*, cook, but *Guordeſtam* in its place. When cooked the men regaled themſelves with it, giving part of it to the women, with ſpecial care that they ſhould not have any part of the haunch, nor that it ſhould be given them through the uſual door, but put in through a rent made in the covering of the cot, in the place where the pots and kettles were put, mentioned in Chapter V. Through this place, by which bear's as well as rein-deer's fleſh was put in, neither entrance nor outlet was permitted to the women. When the bear's fleſh was conſumed, the bones were laid in the earth; and after three days that they lived ſeparately, a mutual intercourſe was then opened for them. He who had the good fortune of killing the bear from that time took it ill if any one paſſed behind him.

Scheffer tediouſly deſcribes a great number of ſuperſtitious ceremonies uſed in bear-hunting, the truth of all I cannot vouch for, neither from what I actually know, or hear from others; for in that part of the country in which I diſcharged the function of a miſſionary a bear was ſeldom killed: and to the whole of this account of his on this part of the ſubject I agree; nor is there any thing in it that exceeds an ordinary belief, in my opinion.

When diſcharging leaden balls from their muſkets they make uſe of obſcene expreſſions, and were of an opinion that the wolf had the power of faſcinating their pieces, and could prevent their hitting the mark.

A certain bird, of black colour, with a white ſtreak going round the neck, a conſtant inhabitant of the cataracts, called in Lapland *Kuoik-Gærheek*, in Norwegian *Elve-Kald*, was counted lucky; could any one catch ſuch a bird, he kept it carefully and had it in great eſtimation. A certain Laplander of the mountains, by name John Jonſon, by the Laplanders called Hano, a man of wealth, living at Oz-jok, a place then belonging to Swediſh Lapland, was ſaid to have taken a bird of this ſort, and to have kept it alive as a thing of ſacred and ineſtimable value, in a white ſhoe, or *Kamag*, and would not fling it away when dead, but preſerved it as an object of great value, little doubting that fortune would be propitious to him while he kept this bird. On this man ſee more in Chapter XV. on the manners of the Laplanders.

If any man happened to come under a tree where the cuckoo kept, and it raiſed its note before it fled, he thought it a happy omen for him. To have found the eggs of this bird was regarded as a happy omen; the head of the perſon who eat the eggs of ſuch a bird was to be covered with a kettle. To kill a cuckoo was always thought ill luck. And if any one heard him when faſting, in the beginning of ſpring, this was deemed an unluky omen, that he would be on bad terms all the next year with his neighbour. To avert this bad omen he forthwith tore the bark from the firſt tree that preſented itſelf to eat, after going three times round it.

If any one in the beginning of ſpring had heard the cry of the *lom*, a kind of large bird, when faſting, he perſuaded himſelf that all that year's produce of milk could not be curdled, or turned into cream, but would be like whey. They had a ſuperſtition too, that if they played with fire even in jeſt, that the young of the rein-deer would be blind. It was a cuſtom alſo to mark the doors with the ſign of the croſs.

It is apparent, that the ſun in Lapland in the winter, for the ſpace of ſeven weeks, is below the plane of the horizon, and under the lower hemiſphere; and that the ſame does not ſet in ſummer for the ſaid ſpace of time; and hence a cuſtom, that on its return after ſeven weeks darkneſs they anoint their doors.

They have a fooliſh belief, that ſtones which are weightier than their ſize and outward figure ſeem to require, had in them ſomething preternatural and uncommon.

They believed that thunder ſtruck their wizards with horror, even killed them. With this perſuaſion not a ſmall number of Nowegians was impreſſed. Hence the proverb, That if thunder did not exiſt, wizards would deſtroy the univerſe. They ſay, that, on the ſight of lightning, they run up and down the woods, ſtruck with horror, until they find a hollow tree to conceal themſelves in, which was juſt blaſted with lightning.

There is no doubt but that the Laplanders cheriſhed many more ſuperſtitions, but to dwell longer on them would be tedious, having already adduced examples enough to prove to demonſtration the errors of this moſt miſerable people.

CHAP. XXIII.—*On the Lapland Miſſion.*

A CERTAIN diſtinguiſhed biſhop of Drontheim, named Eric Bredal, who filled the epiſcopal ſee from the year 1643 to 1672, exerted himſelf with the greateſt induſtry in the inſtruction of the Laplanders in divine knowledge. He not only made learned maſters, but even in his own houſe took care that the children of the Laplanders ſhould be inſtructed, as alſo at the houſes of many of the clergy in the country. Thoſe who

who had attained a due knowledge of the divine truths were diſperſed here and there through the mountains by the command of the biſhop, among the Laplanders to be yet inſtructed in their duty. Yet this diſtribution did not produce, from a variety of obſtacles that occurred, that inſtruction and converſion of the Laplanders to the extent that was wiſhed for. But the royal miſſion, which was moſt graciouſly inſtituted in the year 1714, has brought the Laplanders to that degree of Chriſtian knowledge, ſurrounded before with thick clouds of error, that the light of the divine evangeliſts and the glory of the Lord now ſhines on them, which as being the ſingular bleſſing of the ever adored and Almighty God, united with the unwearied and chriſtian endeavours of the Daniſh kings, the whole band of Chriſtian princes ſhould follow with gratitude. This miſſion extended through all the governments under the Daniſh ſceptre, and of courſe through three provinces, namely, Finmark, Norland, and no ſmall part of the province of Drontheim.

This pious and glorious work was begun in the following manner: Frederick IV. of bleſſed memory, when he came to the throne, ſent a certain expert and able man, (for he had long before turned over this miſſion in his mind,) named Paul Reſen, to the northern countries and Finmark; who, on examining theſe countries, ſhould bring in an exact report of them to his Serene and Royal Majeſty. This Paul Reſen, who was afterwards commiſſary and camp maſter at Bergen, reported his knowledge on this matter in the year 1707. When this was done, his Majeſty iſſued his mandate to Doctor Peter Krog, biſhop of the dioceſe of Drontheim, for the purpoſe of ſelecting capable men for diſcharging the duty of the miſſion in the northern countries, and in Finmark. In the year 1714 a ſtrong hand was put to this work, as mentioned above, yet it is as yet reſerved for the glorious undertaking of their Serene Majeſties of Denmark. A college was therefore erected at Copenhagen, for promoting the progreſs of evangelical learning, by the father of his country and of the church, in the ſeat of empire, who, that he might the more eaſily compaſs his object, joined his counſels with men of conſiderable knowledge, and ſuch as were zealous for the extenſion of the church of Chriſt, natives as well as foreigners, concerning the completion of this pious and glorious work. This plan made for the converſion of the Gentiles, containing thirty-one articles, he took care ſhould be printed on the 19th of January 1715, in Daniſh and German, which, by a circular letter, ſigned on the 9th of March of the ſame year, he ſent not only to all the governors of the provinces and the biſhops, in Denmark and Norway, commanding that they ſhould publiſh it in their provinces, but ſent it alſo to others, natives as well as foreigners, particularly in a letter written in Latin, to the Society at London for propagating the knowledge of the Chriſtian religion. When this was done promiſes of aid and counſels for ſupporting this work came from all quarters. Seven very learned men and divines of the kingdom peculiarly zealous for the propagation in the dioceſe of Drontheim compoſed this glorious counſel: theſe were Janus Juul, paſtor of the church and preſident of the Nordmaern preſidency: Amund Barhorv, paſtor of the church of Quernaës, in the ſame prefecture. Thomas von Weſten, then paſtor of the congregation in the preſidency of Romſdal, afterwards reader of theology at Drontheim, and vicar of the college of miſſion, &c. &c. &c.

After theſe had ſucceſsfully diſcharged the duties of their truſt, three pious and worthy miſſionaries were ſent into Finmark, in three diviſions; the firſt into Waranger and Thana, in the eaſt; the ſecond into Laxefiord bay, in the eaſt, and to the bay of Porſanger; the third, to Halſund, and the diſtrict of the bay of Alten, in the weſtern Finmark.

But

But the great incoveniences that the Lapland miſſionary has to ſtruggle with may be eaſily judged, from the reception he meets with in the hut of the maritime inhabitant where he puts up; from his living among his cattle; annoyed with their naſtineſs; the diſagreeable and offenſive ſmells excited from it. What this is may be eaſily inferred by thoſe who, from their early days have not been uſed to this ſituation.

Nor is he better off with the mountain Laplander. His habitation is no better than a ſmall boughed cot, full of rents, which are not even in the middle of winter, ſtopped up.

He is ever annoyed with thick black ſmoke: from the inſtant the fire is lighted the whole cot is filled, from the vent-hole in the roof to the bottom, with an abundance of the foulеſt ſmoke, that the eyes can ſcarcely be opened without injury. As the fire kindles up it decreaſes a little, that, ſhould a traveller ſit even on the ground, yet he cannot get out of the ſphere of it; but never is he more plagued than when the wind vehemently blows all over the cot; then it rages with all its fury; that, enveloped in a thick miſt of it, he is ſurrounded, not without a ſignal injury to his eyes.

To this is added the further moleſtation, equal to the former, namely, the vapour that aſcends from the wood freſh cut and moiſt, when laid on the fire. The foul vapour of this is ſometimes even worſe than the ſmoke itſelf.

To the other incommodities is added, and with reaſon, that inſufferable cold, which attacks this quarter of the world beyond the conception of any man, and even penetrates with eaſe into the open tents of the Laplanders For it often happened to myſelf while among the mountaineers, that, on waking in the morning, I could perceive under the blanket of ſkins that covered me, my breath turned to a hoar froſt. When ſitting to write on the floor of the cot, on the deſk placed between my legs, though the inkſtand was placed near the hearth, heated with a conſtant fire, yet it has happened more than once that the ink froze, while writing, in the pen. When I took a place at the fire to warm myſelf, my feet, as turned to the hearth, were warmed even to ſcorching, while my back, which was from the fire, trembled almoſt through cold. But the exceſs of the cold in winter how great it is in the Lapland mountains will appear from this account of mine from experience. A fire is kept continually burning, as is the cuſtom of this people, piled up in the middle of the tent, recruited with freſh fuel perpetually put on it. The covering is at the diſtance of three ells from the fire-place. This, when ſtated, who could imagine that a blazing fire, and burſting out into high flames, could not prevent its freezing within, or at leaſt that it would thaw and prevent the cold from hardening froſt in the tent? But the very contrary is the effect. For, when ſitting before the fire, I well remember what exceeds belief, I found that part of the wall which, by reaſon of the ſhade of my body did not receive the heat of the fire, frozen, and retain on its ſurface as it were my likeneſs painted in white.

Nor was there a ſmall inconvenience from the want of good and wholeſome beverage: for whether in the tent of a mountain or maritime Laplander, there was nothing to quench the thirſt but cold water, ſometimes mingled with ſnow; and on failure of this, the ſnow alone was melted in a kettle over the fire.

Nor muſt a miſſionary expect, in hoſpitable receptions of this ſort, a ſoft and downy bed, in whoſe place is ſubſtituted a rough rein-deer's hide, on the bare ground, or at leaſt on a few plained pieces of wood, with the traveller's cloaths placed under his head as a pillow. When laid down to repoſe, he well nigh touches the ſnow with his head, removed at leaſt from it by a palm's ſpace; for he lies on the ground, his feet toward the fire, and his head againſt the wall, which, as obſerved above, is on the extremity, ſurrounded with perpetual ſnows, and intrenched as if by a rampart.

In

In addition to all theſe incommodities which gather round a miſſionary in this part of the world, that inquietude, painful enough, ariſing from being neceſſarily conſtrained to the cot of the Laplanders family, is ſtill in the rear. When at leiſure for ſtudy and meditation, the mind looks for retirement and tranquility. But the miſſionary muſt meditate in the cot itſelf, in the midſt of the occupations and talk of the ſervants, the crying of infants in their cradle; or he muſt walk out in the open air, where the cold and falling ſnows in no ſmall degree diſturb his mind, intent on ſtudy and meditation. All theſe evils I have experienced, not ignorant that you my brethren will have to ſtruggle, appointed to the ſame office, as I formerly have been, with all the incommodities and moleſtations I have juſt deſcribed.

It ſometimes happens that a miſſionary traverſing the mountains in winter, in diſcharge of his duty, comes to the tent of a Laplander, at the time when he is preparing to go to another quarter, on account of a deficiency of moſs, which the rein-deer have eat up in the place he has. He takes with him his tent, his family, and his whole herd of rein-deer, now in need of ſubſiſtence. In this caſe he is obliged to follow the Laplanders as he wanders, regardleſs of air, of cold or ſnows, finding no reſt until the Laplander, after he has found a place fit for himſelf and his rein-deer, now wanting to be fed, has pitched and fully furniſhed the cot, clearing away the ſnow, and fitt d it up with all its props and appendages.

It happens alſo that the miſſionary together with his fellow guide which they call themſelves *Oaoppes*, when travelling through the mountains, meets with a great fall of ſnow directly in his eyes and face, that he is under the neceſſity of veiling both, leſt he ſhould be altogether overpowered by the exceſſive heaps which are whirled about by the wind in circles. He who is in this predicament, is ſo buried by the falling and agitated ſnow, as if in an exceſſive thick miſt, as ſcarcely to be able to ſee the rein-deer that draws him, a circumſtance that often befel me when paſſing over the mountains. And ſince the traveller is almoſt deprived of all uſe of ſight, by this misfortune, it follows, that there is danger, leſt getting out of the right path, on account of the various and oppoſing precipices, he ſhould fall into the greateſt riſque of his life; and doubtleſsly many would have periſhed, did not the God of Iſrael, who governs the univerſe by his providence protect them under the covering of his wings.

Another inconvenience ariſes from the ice, when the cold is very ſevere, and much ſnow is falling, faſtening on the cheeks of the travellers, which like a plate covering the face, is afterwards torn off, and from icicles ſticking to the eye brows, which occaſions much painful trouble to thoſe who are not, from their early years, accuſtomed to theſe ills. Even when you have got over theſe incommodities and dangers you are arrived in a cot filled with the foulеſt ſmoke, a circumſtance which creates no ſmall degree of moleſtation to the traveller, and to paſs over the other ills, it is ſufficient to mention this one alone, that if his ſtay is many days in the cot, this ſmoke cauſes his face to inflame, and ſwell up with a variety of puſtules.

Should it ever happen, which in reality happened to a miſſionary in paſſing over the mountains, either that the length of the way, or the heap of ſnows falling, or for any other reaſon whatever, night now preſſing on, you cannot reach any one inn, you muſt then remain under the open ſky without covering, keeping off the cold and ſnows, in the ſledge through the whole night, or if the place happens to be woody you muſt remain under the covering of ſome trees, cut down from the higheſt wood, driven into the ground and covered over with a thick linen canopy, which the traveller takes with him for this purpoſe until the break of day. This ſhelter, vile and broken as it is, is better than being in the open air; each mode of paſſing the night from experience is known

to me. And to comprehend all in a few words, ſo many inconveniences and diſtreſſes ſurround and exerciſe a Lapland miſſionary, ſo many labours to undergo, whether you look to the cold of the climate, which in its ſeaſon is almoſt inſufferable, or reflect on the reception you meet with in a ſmall and ſmoky cot, or the ſuſtenance of it, ſuch as congealed rein-deer's milk, ſpring water, and that ſometimes exceſſively cold, and mingled with ſnow, &c. with other innumerable ills in recounting which I am ſcarce able to conclude, that it muſt be attributed to the ſpecial providence of God, and to him alone, that men not accuſtomed to the climate and manners of this people, from their earlieſt years, do not ſink under theſe ills; and eſpecially thoſe who do not enjoy a good ſtate of health, ſuch as myſelf, but are able to encounter and conquer all theſe evils without the loſs of their health or their lives. But here, as often elſewhere, the Divine power, wiſely diſpenſing all things in a manner that is above the reach of human capacity, manifeſtly diſplays itſelf.

During the term of my miſſion, whatever ſeverities and diſtreſſes I had to contend with I bore with equanimity and cheerfulneſs, reſigned and happy in the condition providence had placed me; ſhould you aſk and enquire the reaſon, it is this; that the Laplanders are of a diſpoſition ſo gentle, mild, and tractable, that in their intercourſe with other nations ſo much more poliſhed in their own opinion as well as the in opinion of others, they ſeldom offend, a liberal, juſt, or equitable mind, and provoke it to anger and indignation. He who reſides among them, has no cauſe of fear from them. The ſpring of freſh water has for them a more lively reliſh than wine; that alone can allay their thirſt.

*AN ACCOUNT OF A VOYAGE FROM ARCHANGEL, IN RUSSIA, IN THE YEAR 1697; BY THOMAS ALLISON, COMMANDER OF THE SHIP.**

I SAILED over the bar of Archangel on the eighth of October 1697, about four in the afternoon, in the ſhip called the *Ann*, of *Yarmouth* (burthen 250 tons), and bound for London; by that time it grew dark, I came to an anchor, to get all things faſt for the ſea; the wind S. S. W., cloſe weather.

The ninth (being Saturday), by the firſt light of the morning, I weighed anchor, and made the beſt of my way; at ſix in the evening I got the length of the land of *Cats-noſe*, the wind S. S. E., fine weather.

Sunday, the tenth, at break of day, we were the length of Croſs Iſland: juſt as it was dark I got through the narrow thwart Cape Loganneſs, the wind then at S. S. W., and good weather.

Monday, the eleventh, as ſoon as it was light, I found myſelf even with the iſland of *Lambaſco*; and at four in the afternoon the high land of *Swetnoſe* bore S. from us, diſtance fifteen miles; from whence I took my departure, the wind was then at S. E., handſome weather.

Tueſday, the twelfth, proved very fair, and almoſt ſtark calm, ſo that I made my way W. N. W. but twenty-ſix miles diſtant from the place whence I began my reckoning the day before, to the noon-tide of this; thence forward being computed as part of day enſuing.

Wedneſday, the thirteenth, continued ſo calm all the twenty-four hours, that I made my way N. not above thirteen miles; the breezes we had were at N. W. and W.

Thurſday, the fourteenth, began fair, with ſomewhat more wind, firſt at N. N. E., afterward at N. W., with ſqualls†: my way was W. by N., diſtant forty miles.

Friday, the fifteenth, the whole twenty-four hours the wind kept ſhifting from N. and W. N. W., and in the night little: my way exceeded not ſixteen miles N. W.

Saturday, the ſixteenth, for the firſt twelve hours the wind continued to ſhift to and fro, between the W. N. W. and the N. N. E., with uncertain weather. At eight in the morning it came to the S. W., and began to blow hard, and we had a very great ſea out of the W.

Sunday, the ſeventeenth, till midnight, we had frequent ſqualls, and in the morning it began to blow from the S. W., ſo as to oblige us to take in two reefs of our topſails, and a great ſea came rolling out of the W.; notwithſtanding I made my way good N. W. half W., diſtant ſixty-nine miles. This day I had an obſervation, and found myſelf in lat. 70° 15′.

Monday, the eighteenth, towards night, it proved a ſore ſtorm, but it came down gradually, firſt putting us paſt carrying our topſails then our foreſail; at length, being under a main courſe, by four in the morning, our main-tack broke. Afterward I lay under a mizen during the fret of wind, till it was fair day, and then I ſet my mainſail. I made my way that twenty-fours N. W. half W., fifty miles, the wind ſhifting from S. W.

Tueſday, the nineteenth, at two in the afternoon, the wind came to the S. E. by E., and held calm all night: by ſix in the morning it was E., ſtill little wind; but at ten

* London, 1699, 8vo. This Journal, which is rare, and has eſcaped the collectors, is annexed, as a curioſity, to the account of Lapland.

† A ſquall is a ſudden ſhower of rain, or fall of ſnow, attended with wind.

we had ſuch a gale, that I was forced to hand our fore-ſail, and out of the N. W. came the fierceſt of it, freezing hard withal. Howbeit, in the twenty-four hours, I made my way W. N. W., twenty-five miles.

Wedneſday, the twentieth, it continued very bad weather, the wind at N. W.; but at ſix in the morning the wind eaſed, and we ſet our fore-ſail: then it came to the N. and to N. E., and ſo to E. I made my way S. W. by W., four miles.

Thurſday, the twenty-firſt, by twelve at noon, the wind was at S. S. E., handſome weather; by two I found it in the S. S. W. corner, with a ſky ſo fair and clear, that I plainly diſcerned *Terry berry*, to the S. S. E., eighteen miles off. All this twenty-four hours there came a great ſea out of the W., againſt which I made my way forty-two miles.

Friday, the twenty-ſecond, it continued a hard gale of wind at W., which put us under our mainſail and mizen till two in the morning; then the wind coming northerly, I tacked and made way N. N. W. ten miles.

Saturday, the twenty-third, at eight in the morning, I ſaw the North Kyne, diſtant twenty-one miles, to the S. by W., and the wind being S., I made the beſt of my way to the weſtward.

At ten it came to W. S. W., and preſently after to W. N. W., blowing ſo hard, as to put me under three courſes reift, ſtanding to the northward, till twelve at night. Then I tacked to the weſtward, but the wind in two hours after came to the N. W. by W., whereupon I tacked to the northward again, under three courſes reift; but at eight in the morning I went about to the weſtward, having made my way this twenty-four hours W. by N. twenty-ſeven miles.

Sunday, the twenty-fourth, by twelve at noon, the wind was at N. by W., and N. N. W.; but by three in the afternoon it came to N. W. by N., with ſo much wind, that I durſt not tack the ſhip, for fear of loſing our mainſail, and yet I could carry none but that and a mizen; ſo I charged a good looking out, deeming ourſelves near land.

Monday, the twenty-fifth, at four in the morning, being moon-light, we ſaw the land of the North Cape, two points under our lee-bow: then we looſed the fore-ſail, and ſtood to the eaſtward, under three courſes reift: we likewiſe ſet our mizen ſtay-ſail; but ſuch was the ſtreſs of wind, that it immediately flew out of the bolt-rope. As ſoon as it was day, we plainly perceived we could not weather the land of North Kyne, it continuing very ſqually.

After I had well conſidered our condition, I called my men together and told them my reſolution, which was to run up the wide *Fuel* * (that was then before us), while the gale laſted; reaſoning with them, that to ſpend the day in tacking before it was to diſable ourſelves, and perhaps ſplit our ſails, and when night came on, to drive upon the rocks, would be to the hazard of our lives, ſhip, and goods.

Thereupon, in hopes of more ſecurity under ſome point, iſland, &c. or in ſome bay to anchor, I put the helm a-weather, and ran for the *Fuel*, which I judged might be ſeven or eight miles wide.

Accordingly I hauled up my foreſail, that I might ſee before me while the ſqualls of ſnow fell; which after they were paſt I ſet again, uſing all diligence that could be in ſearch of ſome ſhelter from land, or place of anchorage.

At one in the afternoon I diſcovered an iſland which had a ſmall breach off it; but the men in the tops, and on the yards, ſaid the opening next the main was ſo large, that no ſecurity could be under it. Then I ſteered my courſe to the eaſt ſide of the *Fuel* (for the iſland aforeſaid lay on the weſt), and running up S. E., I ſaw ſomething like a

* *Fuel*, is an opening between two head lands, having no bottom in ſight, but a ſeeming inlet into land.

bay; but the hills ſeemed ſo ſteep that I was loath to ſhoot myſelf into it, for fear of having no anchor-ground. For it is generally obſerved by us in ſuch countries, if the hills be very high near the water, there are commonly great depths at little diſtance; ſo that looking further a-head I eſpied a ſhore, as I thought, with a handſome deſcent, and concluding ſuch places more likely for my purpoſe, I ſet my fore-topſail and main-ſail. Then came on a fore ſquall, which forced me to hand my fore-topſail, and haul up my mainſail; but before the ſquall was over I was got paſt that bay: yet then I ſaw another point, and our water ſmoothed much. For that I made way, and ran cloſe to it, ſtill finding no ground with our lead; but on the other ſide of the point went in a great bay. With keeping the lead I came about the point, and found twenty-five fathoms water, ſoft ground: then I let go my anchor, and got my ſkiff out, to carry a haulſer aſhore; which was no ſooner done, but the eddy winds came off the hills upon the point, and ſwung the ſhip's ſtern ſomewhat too near the ſhore.

But the ſquall being over, the wind eaſed, and blowing more into the bay (which by its looks promiſed well), I hove up my anchor, and drove further into the depth of forty fathom, letting it then drop again. By this time it grew dark, ſo we gave her a whole cable, and rode in ſixteen fathom. Then after all things were ſtowed, and we thought ourſelves very well, and went to ſupper, I felt the ſhip to rub on the ground. I immediately commanded the lead to be heaved over the poop, and found there was not above two fathom water. Then I cauſed two fakes of the cable to be taken in, and we rode with our ſtern in ſeven fathom. Whereupon I got a ſmall anchor and haulſer into my boat and rowed into the flat bay, in ſixteen fathom; by which means I heaved the ſhip further into the depth aforeſaid, with very good ground. At the ſame time I ordered the boat to ſound round the ſhip, and found the place where I rubbed on the ground to be a point of rocks lying from the main on the ſouth ſide, but all over the bay elſe to be good ground; ſo we lay all night.

Tueſday, the twenty-ſixth, by day-light, I ſent a boat with a mate to ſee how things were about us; who reported that in the bottom of the bay run in a good harbour, and likewiſe that ſome houſes were in ſight; but upon my re-ſending the boat, they were found without inhabitants.

By that time theſe ſearches had been made, night came on. (Note that we accounted ſo much light to make day as was ſufficient to read by, or wherewith we were able to diſcern a boat at half a mile's diſtance; for though the ſun might be at that time about three degrees high upon the meridian, we being under high land, could not perceive his whole body.) The reſt of our men on board were fitting the ſhip, by mending the rigging and ſails; the wind at N. W., moderate weather, with ſome ſnow. That night I was much troubled with conſideration of the place where we lay; that if the wind ſhould come to the N. E., with any gale, we might blow off the bank, and then into more hazardous, becauſe more unknown, places.

Wedneſday, the twenty-ſeventh, at break of day, I got my beſt bow-anchor aboard, and warped further into the bay, where I rid, having withal two haulſers faſtened to a rock on ſhore. We continued to fit the ſhip for the ſea, when it ſhould pleaſe God to give us an opportunity. The wind was yet northerly, clear weather, ſo that we ſaw land on the weſt ſide over againſt us, which we ſaw not the day of our firſt coming in, and I judged it might be eight miles off.

Thurſday, the twenty-eighth. This day proved very bad weather, with much ſnow, and the wind ſhifting, ſometime at N. E.; at N. and N. W., ſo that we could not but acknowledge the providence of God in directing us to move where we were; for had it not been done, we muſt have been blown from our former place. Then I went myſelf

to

to ſearch, and ſounded the bay and harbour all over, and made what diſcovery I could of things about us, finding a good watering-place, and plenty of wood near at hand. At my return, upon complaint of ſome of our men's embezzling and ſtealing our bread I ordered it to be locked up; for it began to look with little hopes of getting out till the light moon came. We got a boat's load of wood and one of water that night on board; and began to conſider further as to our ſafety in that place, ſhould the wind weſter, and break our haulſer aſhore.

Friday, the twenty-ninth, at break of day, I went and ſounded from my bow-anchor to the eaſtern ſhore, and found forty fathom a little from it, ſtill depthening towards the ſaid ſhore. Whereupon arguing with myſelf, that after removal of the ſhip further in, I might ſet ſail and come out as eaſily, and yet in the mean time be ſecure in the worſt weather; I removed farther into the harbour, even to the place where we lay all winter. This we had ſcarce done, and made our ſhip faſt, but it began to blow right in, and ſoon after it proved ſuch a ſtorm at N. W., that had we kept our late ſtation we had in all likelihood been loſt. Here again our men were made ſenſible of the goodneſs of God towards us, by a freſh inſtance. Then having account that our peaſe were unreaſonably waſted, I ordered a barrel of them, with two great bags of bread, of two hundred and a half each, to be brought up into the round-houſe, with all ſmall proviſions, as butter, and cheeſe, and fruit, to ſecure them there; and reduced our men to half allowance, that we might have ſufficient wherewith to go to ſea; for here we abode as neceſſity drove us, and not with any intent of reſidence as yet. I obſerved at this time the days to ſhorten exceedingly, being now not above ſeven hours, according to the explained meaning of day in the paragraph aforegoing.

Saturday, the thirtieth, I moored the ſhip with two bowers to the offen, along the bank, that is to ſay, one to the S. E., and the other to the N. W., and carried both the kedge anchor and warp anchor aſhore, and placed them together, each with one flook in the dry ſhore, burying them with ſtones, for the better holding. To one of theſe my kedge haulſer, to the other my ſtream cable, was faſtened, likewiſe a new tow-line to a great ſtone, lying all as one to the W. S. W.; ſo between all theſe ſhe ſwung by the head. Take notice, the harbour was in faſhion like an oven, lying S. E. and N. W., being a mile from the mouth to the bottom, and two cables' length, viz. four hundred yards in breadth or wideneſs: lying thus we ſhut the oven's mouth, that is, we could not, ſo lying, ſee into the wide fuel. My beſt bower lay in twenty-one fathom, and my ſmall bower in nineteen; the middle of the harbour being of that depth, both upward and downward, but ſhowling toward either ſide, with good clay ground.

It blew hard all day, with much ſnow, and ſome ſmall rain; ſo I ſpread a ſail over my main-deck, the weather being ſo ſharp, there was no ſtanding upon the ſame without it.

Sunday, the thirty-firſt, it blew a ſtorm all day at N. W., inſomuch that we could not continue the covering aforeſaid, but were forced to take it down, and put the ſail together again.

Monday, November the firſt, I ſent all hands aſhore to get firing; for the ſnow increaſing, we feared our wood would all be buried under it. Our ordinary manner of wooding was to go in the long-boat, with ſixteen or eighteen men, to the ſhore upon which the trees grew, almoſt from the beach half way up the hills: they were birch moſtly, with ſome ſmall trees like willows, the biggeſt of either not exceeding a middling man's thigh, and the appearance of them above the ſnow not above three yards. We cut them as the depth of the ſnow ſuffered us, ſome nearer, ſome further from the root; for the plenty we had, eaſed us from digging much. Beſides, unleſs the ſnow was newly

fallen, the ſurface of it was ſo hard cruſted by the froſt, as to bear; notwithſtanding ſome accidentally plunged in now and then, but recoverably. The dragging of the trees thereby was no leſs eaſy, being upon a deſcent; and we lopped them near the ſhore, for convenient putting on board and ſtowage. We got that day a long-boat full, that is, about a cart load, as I judged, or more.

Tueſday, the ſecond, I got two boats full of wood more. Much ſnow fell this day in ſqualls, with hard blaſts from the N. W., till towards night.

Wedneſday, the third, it being fair weather, I ſent my ſkiff with hooks and lines to take fiſh; but in the fuel they could find no ground with a hundred fathom of line; yet they made ſome trial nearer the ſhore, without perceiving any to bite. There were but four men employed in this expedition, the reſt went with the long boat a wooding as before, but with greater toil and labour, occaſioned from light ſnow fallen the former night. This night alſo added more, it freezing hard withal, and the wind northerly.

Thurſday, the fourth, it proved fair over head, the wind N. E., and moderate. This day we got a boat's load of water, conſiſting of four hogſheads full: at the ſame time two of our men got up to the tops of the hills to the S. W. ſide, to ſee what they could diſcover; and brought word they had met with the prints of deers' hoofs, producing a piece of an old horn they had found as a teſtimony. Likewiſe of bears, wolves, and foxes: theſe three are eaſily diſtinguiſhed; the impreſſion of the bear being flat and long, and like that of a human foot; thoſe of foxes and wolves are like dogs, the latter bigger. They ſaw ſmall creatures too running and playing, which they believed were foxes. The watering crew alſo ſaid they ſaw the ſteps of deer where they had been.

Friday, the fifth, the wind was at S. E., but with ſuch a ſtorm, that we could not think of looſing our ſhip for the ſea. However I ſent ſix men armed aſhore, for diſcovery, or what they could get; but the wind and ſnow was ſo ſevere upon their faces, that they could not proceed farther than the firſt hill; ſo they returned, and only reported they ſaw a river on the eaſt ſide of the hill that was frozen faſt.

Saturday, the ſixth, I got a boat load of wood. It froze extreme hard, the wind at N. E., turning to the N. W. towards night, and began to blow.

Sunday, the ſeventh, it proved a freſh of wind, at N. W. all day, freezing hard.

Monday, the eighth, it blew ſo hard at S. S. W. that it broke all our ſhore faſts, pulled home our ſmall bow anchor, and drove the ſhip on the N. E. ſhore, with her ſtern aground; but by good hap our beſt bow anchor brought her up, and ſwung the ſhip into deep water; ſo we rode between our bow anchor, it proving moderate weather towards midnight.

Tueſday, the ninth, I got my anchor on board, and moored the ſhip in her old place, by laying the beſt bower to the N. W., the ſheet anchor to the S. E., and ſmall bower to the N. E., and carried all haulſers and tow-lines to the anchors on the dry ſhore, to the W. S. W. of us. This we did as out of hopes of getting to ſea this light moon; for our rudder-head was wrung in pieces by a blow given againſt the ground the day before, and ſomewhat damaged in the lower part. I then made the ſhip as ſnug as I could, by taking down our mizen-topmaſt, crotched-yard, and ſpritſail yard, with our low yards, fore and aft; but our ſails we could not unbend, being ſo hard frozen. The wind came N. W., which forwarded us in faſtening our ſhip, and that was both our day and night's work.

Wedneſday, the tenth, I got two haulſers more aſhore, it blowing a hard gale at S. E. till ten at night. Then the wind altered and became fair. About this time the hawks we had on board all died, within a few hours one of another. We had likewiſe three foxes to have been brought over, one of which our men eat ſome days before unknown

unknown to me; and this day they roaſted another, which I ſaw, the fleſh looking black like a hare; but upon taſte, I liked no ſuch rank veniſon. The third ran down into the hold, and could not be preſently found; but a month after having played the thief with a piece of our beef, he was knocked on the head and being too lean for food, was thrown overboard.

Thurſday, the eleventh, it ſnowed much, but thawed as it fell; the wind at N. W. with a ſtrong gale. I made all haſte poſſible to get our rudder head mended, by fixing a piece of plank on the one ſide of it. It being bad weather, that was all we could do in a day's ſpace, which exceeded not ſix hours, and no better than twilight. Neither could our men endure the air at ſuch work, longer than a quarter of an hour, without coming in to warm themſelves.

Friday, the twelfth, I got another piece of plank on the other ſide of the rudder head, it proving handſome weather and very clear; whereby we perceived ſomething in the lower part of the rudder as broken, but upon trial with our poles and boat hooks, found only a ſmall piece of the head bruiſed, with damage inconſiderable.

Saturday, the thirteenth, it proved fair, but with ſome ſnow. I took the boat and rowed into the bay, on the other ſide of the point, and at the bottom of it I found a river running in, but ſo frozen as to hinder further diſcovery of it; but by ſounding the entrance, we found twelve foot water at half tide. Going aſhore on the N. ſide I ſaw a great run of water falling into the bay thereby, near the ſhore along a woody valley. Not far from this place, I obſerved the ſnow to lie in ridges, (ſuch as we make upon land, where we ſow our winter corn), its ſurface being hard cruſted with ice, with ſomething appearing above it like ſtraw. There were little more than the bare ears without any grain in them, four or five inches long: ſo that thereby I had hold enough with my hand to pull up the whole ſtalk, which was about three feet in length.

I was under full belief that this was barley, but I could not ſatisfy myſelf, that any had been reaped off there, ſeeing the ſnow covered the ſtubble. To the unbelieving reader I have only this to offer, to evince the poſſibility of it, viz. that the ſoil was good, as appeared by the plenty of wood near it, the oüzy ſhore, and clayed bottom of the bay; the place lying open to the S. and defended againſt the N. E. by the mountains. Withal it muſt be conſidered that the ſun is here about ſix weeks above the horizon, and the days before and after much longer than with us in England at thoſe times. That the bringing of this grain to perfection requires not above fourteen weeks after ſeed time, in more ſouthern regions. At Narva in Livonia, I myſelf have known the ſame corn in the ear, within a month or five weeks after it appeared above ground.

Hereabout I found an anchoring place, but ſo ſteep that whoever uſes it, muſt truſt chiefly to the faſts he makes on ſhore. There was another alſo at the bottom of the bay, a miſe in; but the haſty departure of light made our diſcovery incomplete. So we returned all of us on board miſerably cold. I could not but obſerve that as we went and came by the *fuel* the wind was at N. W. but where the ſhip rode, our men on board had it all day eaſterly.

Sunday, the fourteenth, it blew a hard ſtorm at N. W., pulling home our beſt bow-anchor, until ſuch time as the ſmall bower and haulſers aſhore aſſiſted; and then by all three ſhe rode, till the gale was over, which was not before nine at night.

Monday, the fifteenth, the wind was at N. fair; and we hauled our ſheet anchor farther into the bay.

Tueſday, the ſixteenth, we had a hard gale at E. N. E., ſo that it pulled home our ſheet anchor. There was much ſnow all day and night; the wind after ſome time coming

coming to the N. N. E. with ſomewhat more moderate weather. At this time two of our company were mightily for fitting up a houſe upon land, and putting proviſions therein for ſubſiſtence, in caſe we ſhould be forced aſhore and wrecked. But I could not comply with ſuch advice; knowing the ſhip to be warmer than any thing we could build aſhore, with the materials, time, and light we had to do it. Withal I imagined, that if we had had a place to our wiſh upon *Terra Firma*, I could not have perſuaded them to do what they did; but that the only way of preſerving ourſelves and all we had about us, was by keeping it together, and making the ſhip the ſole place of retreat and refuge. Beſides, I ever ſpurred them up to action, expreſſing daily the hopes I had of getting out; foreſeeing that by their ſitting altogether by the fire, they might grow diſeaſed and unfit for ſervice: on the contrary, that exerciſe, and the expoſing themſelves to the air frequently, would render them more hardy and healthy.

Wedneſday, the ſeventeenth, 'twas handſome weather of wind, and that at N. W., but with much ſnow, yet we hauled out our ſheet anchor again.

Thurſday, the eighteenth, for wind as before. I began now to conſider, that the froſt might render our iron anchors ſo brittle, as to make our dependence on them not ſecure. Thereupon taking with me ſome men aſhore with iron crows and ſhovels, I endeavoured to break ground; which when I found poſſible, I ordered the carpenter to cut a new mizen maſt I had on board, not yet uſed. Of the biggeſt end I took twelve foot, and (after a hole of ſeven foot deep had been digged, with no ſmall labour), I placed it, filling the hole with earth, ſtores and water, which being frozen, might the better fix it, as a poſt for a cable to be faſtened to. But that night I forbore uſing it; being not willing to ſhake it, before it was fully eſtabliſhed. The little light we had was not above five hours continuance.

Friday, the nineteenth, it blew ſtrongly from the S. S. E. and held very clear. As ſoon as it was light, I got my beſt bower cable hauled up; I took alſo a piece of a junk cable about twenty fathoms long, and made it faſt to the ſtake above-mentioned (which ſtood off to the S. and by W.) and ſeaſed an eye at the other end. Then I took one end of my beſt bower cable, (the other being faſt to the anchor), and after I had made an eye on that alſo, with two luff tackles, I brought both as near as I could together, which was within three fathoms, and ſeaſed them.

This I had ſcarce done, but there came down ſo much wind at S. S. E. that we feared all would have been pulled to pieces: but every thing holding ſo well, our men could not but acknowledge the hand of divine providence in what had been done that day: for hereby we were preſerved, not only then, but all the winter.

Saturday, the twentieth, by the firſt light of our ſlender day, we perceived our ſkiff full of water at our ſtern, which we hoiſted on board to mend again. You muſt note we could keep no right watch; our men not being able to walk the deck half an hour for cold.

I now made ſtrict inquiry into the quantity we had of peaſe left, getting a barrel out, and meaſuring them. Of theſe afterwards I delivered out four quarts a day for all our ſhip's company, being twenty-four men and boys, and this I did four days in a week. I likewiſe made ſearch into our other proviſions, and found we had five hundred and thirty pieces of beef, of four pounds each. Of fiſh we had but ſix days left; allowing four North-ſea cods a day: nine days flour and cheeſe; allowing two pounds of cheeſe a day, for four men, with a kettle of haſty pudding, for the whole ſhip's company; that being the beſt way of uſing my flour. Seeing now little hopes of getting home before March at the ſooneſt, we conſidered, that ſtore muſt be kept for the ſea, when

it ſhould pleaſe God to ſend us thither; nor had we reaſonable expectation of getting relief in this place.

Sunday, the twenty-firſt, one of our boys complained of his feet being ſore; our ſurgeon immediately viewing them, found the effect of the froſt there up to his ancles; eſpecially one very dangerouſly: but by his ſkill and diligence, he recovered them in ten days.

Monday, the twenty-ſecond, it proving fair, we fetched a boat of wood; great quantities of which we burnt every day. And here it will not be amiſs to mention our manner of keeping fire. I cauſed the iron hearth in the fore-caſtle to be brought into the ſteerage, and ordered the carpenter to make a hearth as big as conveniently could ſtand in the fore-caſtle; which was five feet nine inches ſquare every way. Then I ſent aſhore for as much clay, and as many ſtones as filled it up: this was ſufficient to accommodate ſixteen men ſitting cloſe about it at once. Moreover I directed the cooper for making a chimney to the ſteerage, in the manner following, viz. by ſtaving an empty butt, or pipe, and reducing the ſtaves at one end, to the breadth of two inches each, ſo that being hooped again, it exceeded not the wideneſs of a firkin at the top, keeping the former breadth or capacity in the middle, ſtill enlarging or ſtanding more open at the bottom. The diſtances or interſtices there between the ſtaves, we filled with pieces of wood, and made all tight with clay and ſtones, which when we had ſo finiſhed, we placed upon the grating. This made the ſteerage very warm; but in all the time we kept fire there, we were obliged to keep the door open for admittance of wind, to give the ſmoke vent.

About eight this night the wind came to the S. S. E. with ſnow and hard froſt; but at two in the morning, there was clear good weather.

Tueſday the twenty-third, we had no foul weather, but ſo cloſe, that we could ſcarce call that light we had, day. However we made ſhift to get a boat of wood, being in great fear of loſing the day wholly.

At eight at night it blew from the S. S. E., but towards midnight the wind came more to the eaſtward, with handſome weather.

Wedneſday, the twenty-fourth, it proved fair and clear, the wind ſoutherly. We cleared the deck of ſnow and ice, which was grown a foot thick near the ſcuppers. 'Twas ſometimes ſqually, but at eventide I ſaw the northern glance: that is, a ſtream of light enlightening all the hemiſphere, ſo as one may read very well with it. 'Tis of a pale yellow or buff colour, like the inmoſt circle of the rain-bow, appearing for a quarter of an hour, then vaniſhing and renewing itſelf again, by intervals during the ſpace of five or ſix hours. Sometimes this meteor ſeems a bright nimble-moving cloud; at another time two of them, ruſhing and encountering one another, like armies engaged, and now and then I have thought with a grumbling noiſe akin to thunder. We reckon the froſt to occaſion them, and whatever reflects or emits the light in that manner, cannot be far from the eye, being ſo plainly to be diſcerned, and ſo exceeding ſwift.

Thurſday, the twenty-fifth, it being fair, I endeavoured to clear the hawſe, but there was ſo much ice upon the cables, I could not do it. This day two of my men went up the hills, but wanted light, to make a diſcovery.

Friday, the twenty-ſixth, ſtill fair and clear, and by the light we had, I brought my beſt bower cable, to the ſtake on ſhore, and ſerved it well with old ropes, to prevent its chafing: the wind at E. N. E. and freezing hard.

Saturday, the twenty-ſeventh, it proved fair and calm, with ſome little ſnow. I got a boat load of water, and ſerved all our cables to prevent chafing, both aſhore and at the hawſe.

I had

I had complaint made me, that ſome had ſtolen fiſh and broiled it; but upon ſtrict inquiry, I found ſuch a thing could not be done privately: by reaſon our men ſat conſtantly round the hearth in the fore-caſtle, from ſix or ſeven in the morning, till eight at night; at which hour or ſoon after, I ever cauſed the fire to be put out, fearing the continual keeping it might endanger the ſhip, or occaſion other diſorders. Nevertheleſs I cauſed the fiſh that hung overboard for watering, to be hauled in, and viewing it well, by the manner of it, I judged that the pieces diminiſhed, were not cut off with a knife, but rather ſeemed bitten by ſome living creature; which I ſuppoſed might be a ſeal, that I had ſeen ſometimes about the ſhip. So I put the ſalt fiſh into a bag, and by a line hung it over the ſhip for freſhening: and in the mean time I got a great ſhark-hook, and baited it with a piece of the ſame; hanging it a foot under water, in a place where the ſeal uſed to ſhow himſelf. I ſtood upon the watch; and juſt as it was dark the ſeal came and took it, making a buſtling at the ſide of the ſhip. I preſently took hold of the rope, to which it was faſtened, and found it too heavy for me, which made me call for help; but before it came he got looſe, and I ſaw him ſet his feet to the ſhip's ſide, and fling himſelf off: after this we ſaw him no more in the bay.

Sunday, the twenty-eighth, it was ſtill calm, but with more ſnow and cloſe weather.

Monday, the twenty-ninth, I hauled my ſheet anchor further out, the wind at W. S. W. blowing freſh with ſnow, but at four at night it began to thaw conſiderably. I then ſhared all the bread in the bread-room, being but five pounds and a half for each man.

Tueſday, the thirtieth, it froze hard again, even our beer between decks; ſo that our men could get nothing but water to drink, which had not ſtood above twelve hours, but became all ice. I conſidered, that for them to drink warm water, might not be ſo good for their ſtomachs, and to ſtave our caſks, would be of ill conſequence for us, when we ſhould have occaſion for them at our going to ſea. I then brought up a caſk of my own honey, of which I diſtributed about two pounds and a quarter to each man, for them to boil in their water, to make a kind of mead withal. This they drank, and were not offended with the ice in their mouths as before. The wind all this day at S. S. E., and the froſt ſo exceſſive, that we feared the ſpring heads would ere long fail us, ſo that we beſtirred ourſelves for a boat load of water.

Wedneſday, December the firſt, it proved fair, which encouraged me to ſend my mate in the boat up the *fuel*, even before it was light; chiefly to ſee if there were any anchoring places for us to make uſe of, in caſe we ſhould put out and not be able to regain our harbour. He returned and brought word, that he ſaw only two iſlands on the W. ſide, and that the *fuel* ran up a great way very wide, where they had much wind; but where the ſhip lay, we found little all day.

Thurſday, the ſecond, 'twas fair weather of wind out of the S. E. corner, but frozen hard all day, with ſome ſnow. You muſt know, our brighteſt time now at noon, exceeded not the light that comes an hour before ſun riſe, in an equinoctial day in England.

Friday, the third, the wind as before, and pretty calm ſtill, but freezing exceeding hard. Howbeit we went aſhore for wood, of which we got not above two thirds of a boat full; ſo ſhort was our day, and this eſpecially ſo very cloſe, that we could not diſcern the tops of the hills all that light.

Saturday, the fourth, the wind kept at S. E., fair, and freezing hard, but towards night ſome ſnow. It was light now about but three hours and a half; as I obſerved by my watch, which in my warm pocket went well, and (to my great comfort) kept its integrity in the worſt of times.

Sunday, the fifth, we had ſome weather of wind with ſome ſnow, and about three at night a ſmall thaw.

Monday, the ſixth, being moderate weather, (but cloſe and freezing) we fetched a boat of water. All our men went aſhore; ſome with guns, and among them they ſhot a white partridge, which was very good meat; the reſt employed themſelves in gathering muſcles, perriwinkles, and dills. Theſe dills are dark brown weeds, growing and hanging upon the rocks, and to be come at while low water: a ſort of ſea-plant or herb, common enough in the north of England, but more frequent in Scotland. There, I am told, they are eaten raw; but by boiling they become ſoft, and look greener, taſting not much unlike a colewort. Our way of dreſſing them was, firſt, to boil them in freſh water, which took away the ſaltneſs natural to them; and after that boiling them again in our beef broth, they ſupplied the place of a ſalad, to eat with our beef.

By ſome Scottiſh men on board, we were happily inſtructed in the uſe of theſe.

Tueſday, the ſeventh, it proved fair above head, the wind S S. E. but freezing very hard. We got ſome empty caſks from between decks to fill them, fearing more and more to depend upon the ſprings. For our men were lately at a great loſs for them, and found it difficult digging in the ice. Their way was, when they went for water, to obſerve the drains upon the ſhore, and ſo along the ſunken or depreſſed places in the ſnow, which were formed from the ſprings of the upper grounds, joining in their deſcent, and making gutters, ſome with ſtreams large enough to turn a little mill. The channels were covered with ice like a ceiling, under which the waters ran freely, but to come at it, they were forced to dig through ſnow, and break through ice, to dip in their bowls and fill their pails; which when full they carried to the boat, where the hogſheads ſtood with open heads to receive them. And notwithſtanding they made all poſſible haſte aboard, and had not above a furlong to row, by that time they got to the ſhip, the water would be covered with a pretty thick ice. The pails too thereby were ſo frozen both within and without, as to weigh much more, and hold much leſs; and we were forced to thaw them continually, for a new day's ſervice.

Wedneſday, the eighth, we had it fair and clear, with a ſmall thaw, the wind weſterly. We filled ſome water, and put it down into the hold.

Thurſday, the ninth, we had very fair weather, and ſo warm as to make a conſiderable thaw: the wind W. S. W.

Friday, the tenth, it was fair over head, but froze exceeding hard; we fetched a boat load of water. Our men thought it good news, when I told them this was the ſhorteſt day, and now we ſhould make ourſelves ready for the ſea, as faſt as poſſibly we could. In order thereto, I gave my chief mate directions for rowing up the fuel on the morrow, to take a full view of the firſt bay we came by. This was matter of encouragement to them, and kept them in action, though I did it with little hopes of ſudden benefit thereby.

Saturday, the eleventh, it proving fair, I ſent the boat into the outermoſt bay to view it, and get acquainted with ſome place of ſhelter, that we might make uſe of, in caſe we ſhould not be able to regain the harbour, or proceed at our firſt putting out. They returned and brought me word, there was a good road within an iſland that lay in the bay: which made me reſolve, if the weather held open that we could work, to make out for the ſea by moonlight.

Sunday, the twelfth, was a fair day, the wind at S. W.

Monday, the thirteenth, it continuing fair weather, we got up our ſprit-ſail-yard and fore-yard croſs again; filled a boat load of water, and got two wouldens on our rudder-head; the wind eaſterly.

Tueſday,

Tueſday, the fourteenth, ſo cloſe all day as to be ſcarce good twilight. A young man in our company took a Bible of a ſmall print, to try if he could read in it, but could not diſcern his letters at twelve at noon. However I got up both my top-maſts and main-yard croſs, hoiſted my mizen-yard, and hauled aboard one of my hauſers. The wind at W. S. W.

Wedneſday, the fifteenth, we had as little light this day as the day before, with uncertain weather, ſometimes blowing freſh and ſometimes calm; but the ſcudd came very ſwift out of the W. S. W. all day: we got but half a boat's load of wood. At nine at night it blew a ſtorm at N. W. with much ſnow, that we were forced to ſtrike our yards and top-maſts as faſt as we could.

Thurſday, the ſixteenth, it continued blowing hard at W. N. W., ſnowing much and freezing at ſo extravagant a rate, that every thing became ice that was capable of being made ſo.

Friday, the ſeventeenth, it blew hard at S. S. E., with more ſnow; and, at three at night, or in the after part of the day (as you will pleaſe to call it,) it proved a ſtorm out of the ſame point.

Saturday, the eighteenth, the wind was all ſoutherly, blowing hard, and freezing ſeverely, but dry over head. Bad as it was, we fetched a boat load of wood, and ſome went aſhore in the ſkiff and got perriwinkles. It was ſtrange how theſe little creatures could live, and endure ſo much froſt: for as ſoon as the water was gone from them, they would ſoon be covered with ice, but the returning tide melted it. Theſe we took off the ſhore at low water, and brought them on board, where we boiled them in the ſhells, and picked out the ſnail, or that part that was meat.

Sunday, the nineteenth, it blew hard at S. S. W., with much ſnow and hard froſt.

Monday, the twentieth, it blew deſperately hard at N. E., with much ſnow and ſevere froſt. Our day at this time was not four hours and a half long.

Tueſday, the twenty-firſt, in the morning the wind was at N. W., at noon all northerly; at night N. E. with little ſnow but continued froſt. About this time I obſerved the ſcooping or emptying of the boat, was a thing of too great labour for the boys to do, ſo I ordered the men to take their turns; this was very grievous to them; for in a night's time it would be half full of ſnow, and the water in the bottom frozen pretty thick; ſo that they muſt firſt throw out the ſnow, then break a hole in the ice, and by that ſcoop out the water, and at laſt take away the ice with ſhovels. The ſtern of the boat too would, in that time, be covered four or five inches thick with ice, and about the edge of the water alſo, which we were forced to break off with mau: or wooden beetles. During this, our people ſuffered ſo exceedingly, as to come aboard with their limbs almoſt ſtiff with cold, and their hair ſo frozen as to hang with large icicles in the faſhion of great tags.

Wedneſday, the twenty-ſecond, cloſe ſnowy weather all day, and the wind weſterly; but by that time it was quite dark it came to the N. E., blowing freſh. Here I think it proper to ſet down my conſtant obſervation of the ſky towards the north pole, which I had made daily for four weeks laſt paſt: viz. that even during that time of light we called day, it continued always black, as if it were a dark cloud forerunning a ſquall. It reached from N. W. to N. E. in the form of a rainbow, the arch elevated 15° or 20°, which made me conclude, that ſomething farther to the N. there muſt be a continual night all that while.

Thurſday, the twenty-third, the morning was fair, but by noon the air was thick with ſnow. I got a boat load of water and ſome wood, and gave every man two pounds and a quarter of honey to make drink againſt Chriſtmas. I find no notice of wind

taken this day, and likewiſe of ſome few before; but I am aſſured it was too dark to think of ſtirring. We could not ſee to eat our meat at noon without candles, of which we conſumed plenty, bringing about five hundred weight from Ruſſia: for though we kept two lamps burning day and night, we yet uſed candles upon frequent and moving occaſions.

Friday, the twenty-fourth, it proved fair and clear, the froſt not exceſſive; ſo that we cleaned our decks from ſnow and ice. The wind was northerly all day, but towards night it came to the E. Our men being very melancholy to think of their friends at home providing good cheer, I told them they ſhould not pinch on the day following; and accordingly ordered every meſs ſhould have full allowance. This put an end to that kind of diſcourſe, and they ſeemed pleaſed with the expectation of ſuch a feaſt; but though not of hauling ſharp * for it afterwards.

Saturday, the 25th, being Chriſtmas-day, in the former part of the day we had good weather, the wind at S. W., but for the latter part it blowed and ſnowed. After dinner, I ſpared out of my own ſtore, to every two men, a bottle of ſtrong beer, which they took thankfully, and made their hearts truly glad. About ſix at night, as I was walking upon deck, I obſerved it ſo bright for a quarter of an hour, that we had it no lighter for ſome days at noon, ſince our being here. This muſt be from ſome northern glance; the more remarkable then, as unuſual in cloſe weather.

Sunday, the twenty-ſixth, it proved indifferent fair, with ſmall ſnow like rain; that is, becoming drops of water, upon its alighting or falling upon the deck; the wind at S. W.

Monday, the twenty-ſeventh, I fetched a boat of water, the weather being fair and calm. This day I took up a hogſhead of the merchants honey, and ſhared it equally, giving each man his part, to make mead as formerly.

Tueſday, the twenty-eighth, the laſt night was warm, and a ſmall thaw we had; the day held fair, and the night enſuing continued calm.

Wedneſday, the twenty-ninth, ſtill over head fair enough, but it froze again exceſſive hard; the wind at N. E. The day was now five hours long, and at noon time we ſaw it was perfect day.

Thurſday, the thirtieth, it blew hard at W. S. W., with ſome ſnow. I ſent the long-boat a wooding, and three hands in the ſkiff for water; and the latter I accompanied, in order to viſit the inſide of thoſe houſes, that were juſt by us, which our men diſcovered ſoon after our coming into this bay or cove. Here were dwelling-houſes for three families, as near as I could gueſs, each having another for cattle adjoining, and one for drying of fiſh, which was open like a cage, with poles lying acroſs. I carried things with me for clearing the way to the doors from ſnow; and, approaching them, I found the dwelling-houſes were built above five feet from the ground, and twelve feet broad, in form round. The walls were made of ſtones and moſs between them, inſtead of mortar, and roofed with the ſame, by the help of rafters or ſplit trees, their lower ends reſting upon the wall, and their upper joining at the top againſt a hollow ſtone, which ſerved both for chimney and window. And for a hearth there was a flat ſtone, laid ſomewhat above the ground; and on one ſide a cabin, big enough for two people to lie in, with ſome ſtraw in it there left, which I gueſſed was all their bedding. In one of them I found a barrel of rye-meal, but ſo bad as not to be uſed for food. We met there with a piece of a printed book, with a form of prayer therein, of the Daniſh language; as one of our men told us, who underſtood it, being by birth of that nation.

* Sea term for pinching the belly.

In

In the houſes for cattle were ſtalls and partitions of ſticks croſſing one another as hurdles are made, ſuch as are in gentlemen's ſtables to part their ſtone-horſes, with boards too at the bottom. They were ſo ſmall as to contain nothing bigger than ſheep or goats; the latter being more frequent in the neighbouring countries. The doors of theſe folds or houſes were not above three feet and a half high, and two in breadth; they were half full of ſnow, ſo that no dung could be obſerved. To one houſe was an incloſure like a yard, with a pond of water, but frozen. Likewiſe there was a place diſcernible, where they hauled their boat upon land, when they had been a-fiſhing.

Friday, the thirty-firſt, in the morning it blew hard at S. W., but the latter part of the day was very warm, and it fell a raining, and thawed very much. This made us wiſh for a light moon to be going with.

Saturday, January the firſt, it blew hard at W., but warm to admiration ſo as to make a very great thaw; even the tops of ſeveral ſmall hills, that laid under the higher ones, became bare and clear of ſnow. Withal a great deal of ſnow that lay upon many parts of the ſhip was melted off. At the ſame time came a great ſea into the bay where we lay, breaking very high at the harbour's mouth; but towards night the wind was at W. N. W.

Sunday, the ſecond, the wind was at S. W. blowing hard. It continued ſtill thawing all this twenty-four hours.

Monday, the third, we had a warm, fair, and dry day, with little wind, and that at S. W. This was the firſt day we could open any ſail ſince we came in here: ſo we opened our mainſail to air it, and found no harm done to it, notwithſtanding it had continued ſo long furled up, which we greatly feared before. We got a boat of water too.

Tueſday, the fourth, ſtill fair over head, and moderate as to wind, which was at the S. S. W., but the froſt had made its return. I ſent the boat into the *fuel* to ſee if they could take any fiſh; but they got none. One hogſhead of water more they got filled, and put between decks.

Wedneſday, the fifth, it blew freſh northerly, with ſome ſmall ſnow, and froze hard again. I ſent my men a-wooding where they could not but obſerve, what alteration the late open weather had made upon the trees, diſpoſing them to flouriſh, by moiſtening their bark, and opening their buds conſiderably; which the returning cold had nipt again. Likewiſe upon the hills that were bare by the thaw, they found plenty of green juniper, of which they gathered, and brought on board a great many branches. Withal they peeled off the tender bark of the willow-like tree, and bound it up in ſeveral bundes, to hang near the fire and dry, for an intended uſe. This over and above their load of wood, which they made good.

Thurſday, the ſixth, it was very fair over head, but blowing pretty hard at S. S. W., the froſt too increaſing. Yet they made ſhift to get a boat of wood, with more juniper, and a quantity of bark as before.

Friday, the ſeventh, it proved very bad weather, the wind high at N. W., and much ſnow again. This day's confinement gave our people leiſure to advance a new project, and make trial of what they had got to ſupply the want of tobacco; with which had they been ſufficiently ſtocked, it would have been a great relief to them, and a choice entertainment. For my own part I had juſt enough to allow myſelf three or four pipes in a day, and could not find in my heart to ſpare any to my beſt friend: though it could not but grieve my ſpirits to ſee one ſmoaking inſtead of it, mere rags of fuſtian torn from a coat pocket. But this was before they found out the uſe of ſomething more like it, being parts of dried plants: I mean the tops of juniper before mentioned,

tioned, and the willow-bark dried. Theſe they now begin to ſhred ſmall with a knife, and mix together in proportions according to each man's fancy, and to fill their pipes therewith. All that take tobacco know theſe have no agreement with the other as to virtue and effects; nor yield the like pleaſure nor benefit: but the ſmoke, I am ſure, was not ungrateful, and poſſibly not unwholeſome, both for the takers and company; and, in my opinion, it was no mean invention, in ſuch extreme neceſſity.

Saturday, the eighth, the weather as bad as the day before, both of wind and ſnow, and freezing hard. However we cleared our decks of ſnow and ice, and ſtowed what wood we could ſpare out of the forecaſtle and ſteerage, to make fit for the ſea, having hopes that it would pleaſe God to give us opportunity by this light moon.

Sunday, the ninth, the night paſt was very ſtormy, blowing hard ſtill in the morning at S. S E. with exceſſive froſt and ſome ſnow; but towards noon the weather mended in all reſpects.

Monday, the tenth, we had a ſtorm out of the N. W., violent and furious, and, I think, with the moſt wind that ever I obſerved in my life, though I have uſed the ſea theſe thirty-eight years. It ſnowed very hard withal, and froze at a great rate, inſomuch that the forepart of the ſhip, by the daſhing of the water againſt her, and the mounting of the foam by the tempeſt, had nothing but what was covered with ice.

Tueſday, the eleventh, it continued blowing hard at N. W., with ſnow and hard froſt. The night paſt we loſt thirteen pieces of beef, as they hung a-watering; which was a great mortification to us. For our way was to put our beef into a wicker hamper, and hang it by a rope at the ſhip's ſide two feet under water; now the rope gathering a quantity of ice, and the exceſſive wind giving the ſhip ſome motion, it was thereby chafed aſunder, and the beef let drop. It is to be obſerved, that we could not freſhen our meat after the uſual manner at ſea, by putting the ſame into a tub of ſea-water; for that would have been all ice in a few hours, and the fleſh ſtill as hard and ſalt as before: the wicker hamper too was to preſerve it from voracious fiſhes, as the ſeal before ſpoken of.

Wedneſday, the twelfth, it blew freſh at S. S. W., and froze ſmartly. We got our warp anchor and two hauſers on board, and made four pair of graplines or creepers, with which we went to try if we could hank the hamper, and recover the beef we loſt two nights before; but we were not ſo lucky as to light upon it.

But my mate in holding the line, while he was creeping or ſearching for the hamper, got the froſt in his fingers, inſomuch that the next morning he found bliſters riſen upon them, and his thumbs as if they had been ſcalded. And after the water was let out by opening them, his hands were ſo raw as to make him incapable of going a-wooding.

Thurſday, the thirteenth, the wind was at S. E. and moderate enough, but the cold as rigorous as at any time before, and this day with a conſiderable rime froſt. However we got a boat load of wood; but when our men came aboard, they complained much of the froſt being got into their feet and hands; ſome only bliſtered, others turned black, and without feeling. Our chirurgeon opened the bliſters, and by fomentations and other applications he recovered them; and where it was turned black, he cut off the dead and ſenſeleſs part, and healed them after ſome time: wherein he manifeſted himſelf to have a good underſtanding in his buſines, by the ſucceſs he had; ſeeing none had any loſs of an entire part or joint, but purely of what fleſh or ſkin was mortified before he ſaw it: and they all became ſerviceable by that time I got home, or ſoon after. In juſtice and gratitude I am obliged to mention his name, WILLIAM BROWN, of *Great Yarmouth*, and educated there under his father of the ſame profeſſion.

Friday,

Friday, the fourteenth, fair and clear weather we had, but it froze ſo vehemently that I durſt not let any man go out of the ſhip, or do any work that day: cheriſhing and giving reſt to the diſabled, and reſerving the ſound.

Saturday, the fifteenth, ſtill clear as the day before, but freezing exceeding hard: the wind in the morning at N. E., but at night S. E. with a violent ſtorm. At noon we reckoned the ſun made his firſt bodily appearance in our part of the world, for the year enſuing: the day eight hours and a half long.

Sunday the ſixteenth, it blew hard at N. W. in the morning; at noon the wind was at N. N. E. and freezing; but not ſo hard as before.

Monday, the ſeventeenth, we had much wind at N. W. with ſome ſnow; the froſt too we looked upon as leſs vehement than formerly.

Tueſday, the eighteenth, the morning was bluſtering and cloudy; the wind at N. W. At noon it cleared, and we ſaw the ſun-beams gilding the tops of ſeveral hills, to our great joy and comfort; for we had not ſeen ſunſhine before in ten weeks. Afternoon the wind came to the N. E.; fine weather; we got a boat load of wood and two hogſheads of water. The latter was difficult to come at, the ſprings being all frozen up, only the run of the great ſpring we found gliding under the full ſea-mark.

Wedneſday, the nineteenth, it was calm and good weather; I cauſed the decks and ſcuppers to be cleared of ice and ſnow: in doing which, we were forced to heat crows of iron red hot, and ſo by degrees melt a way through the ſcupper-holes, and free them from ice. And, with the ſame inſtruments and axes, cut through and raiſe up the ice upon the decks, and to heave overboard. Notwithſtanding it froze extremely hard at this time, yet we had warm hopes of getting to ſea, the wind being at S. E.

Thurſday, the twentieth, the wind was at W. S. W. and moderate: neither was it ſo cold as the day before; freezing no harder than it does in a hard froſt in England; We hauled the ſhip about twice to clear the hawſe; and in the afternoon went and got perriwinkles, muſcles, and dills.

Friday, the twenty-firſt, it blew hard at N. N. W. but was very warm, ſo as to cauſe a ſmall thaw. We got a boat load of wood and another of water; and at the edge of the ſhore our men ſaw eggs, one of which they pulled upon land, with a long bent ſtick, and brought it on board. Theſe are likewiſe called ſea-urchins, having ſomewhat growing upon the ſhells like thorns, or the briſtles upon the land hedge-hog. The ſhape is round and flattiſh, the ſhell thin, and the briſtles eaſily rub off: for a further decription, I muſt refer the reader to authors that treat of ſuch things. It was good news for me to hear of them, knowing what benefit they might be to us; and therefore I cauſed a piece of iron hoop to be fixed to the end of a pole, and made a net like a fiſherman's lead net againſt the next day.

Saturday, the twenty-ſecond, the wind was at W. S. W. the weather fair too, and indifferent warm. We firſt cleared the deck of the wood brought in the day before, and ſtowed it down into the hold for a ſea ſtore. Afterward ſome went aſhore with the pole and net aforeſaid, and got ſtore of eggs; while others went a gunning, who ſhot only a ſmall fowl, called a Greenland pigeon. I do not remember for the firſt two months and more after I came in here, I ever ſaw any but two birds or fowls flying, and they were two crows of a dun colour, not different from ours ſo called; and by ſome Royſton crows. Theſe flew often near the ſhip, and at length were ſo tame as to light upon our deck; one of which our men ſhot, poor and lean as he was, and nothing but ſkin, bone, and feathers. But before I came away I ſaw ſeveral of the Greenland doves aforeſaid, and fowls like what we call kitties, pick up things at low-water, which I gueſſed might be perriwinkles, and ſea eggs eſpecially. For one day,

(though I have not ſet it down punctually, I bear it in mind,) I went myſelf aſhore, and a furlong up the hills, I found the ſhells of ſea-eggs, which I judged might have been carried up by ſuch birds. They are ſpecial good food, and I doubt not but the birds ſuck out all their inwards, though we eat only the yellow part like an egg's yolk, and throw away the other white or jelly part; that we take and put into a ſauce-pan, and pour to it ſome beef broth, which with a little pepper ſtrewed upon it, and ſtewed together, makes a very good diſh.

Sunday, the twenty-third, we had it fair and clear all day, the wind ſoutherly, and the froſt very moderate.

Monday, the twenty-fourth, ſtill fair and clear, the wind ſoutherly. We got our kedge anchor on board, but much trouble had we to come at it: we were forced to dig through a great deal of ice, and the ground itſelf, frozen deep, under which one flook had been long buried. We ſhifted one of our ſmall haulſers too, at the ſtake where the cable was faſt; got both our top-maſts up, hoiſted our mizen-yard, and got our fore-yards up, with an intent to be jogging; but before night it began to blow at S. S. W.

Tueſday, the twenty-fifth, it blew very hard, inſomuch that I was forced to ſtrike both top-maſts, and lower all down again; beſides, it froze extremely hard all this twenty-four hours. Thus were we fatally baulked, and our deſign of ſtirring put a ſtop to, when we had proviſion enough left to go to ſea with; I can't ſay without great hazard of want, and danger of weather, could we have held on our purpoſe.

Wedneſday, the twenty-ſixth, it continued ſtill blowing, and the wind all ſoutherly; ſo that at certain times, when the blaſts came violently off the hills, notwithſtanding the hawſe was very foul and thick frozen, yet the cable would be pulled ſtark out of the water. The haulſer too at the ſtake on ſhore, having a great weight of ice upon it, would nevertheleſs be ſtiff ſtrained above the water, as level as that of a rope-dancer, when it is made fit to walk upon; it being to admiration that the ſtake, cable, and haulſers ſhould hold.

Thurſday, the twenty-ſeventh, the wind and weather ſtill the ſame as the day before, blowing fiercely, but clear over-head, and freezing at a great rate.

Friday, the twenty-eighth, the wind kept its place, but grew more moderate, the froſt ſtill exceſſive; however I got a boat load of water, and another of wood.

Saturday, the twenty-ninth, it blew ſmartly out of the S., and froze ſo extraordinary hard, that the water we brought on board the day before was a ſolid body of ice. For having occaſion to brew that morning (it being late before the water came on board over night), I cauſed one of the hogſheads to be digged into, to ſee if any water could be found in the caſk; and in the midſt there might be the quantity of about two gallons lying in a hole of the depth of fourteen inches, and three inches width: of that I made mead, which proved excellent good, and ſome of the very ſort I brought with me to England.

Sunday, the thirtieth, it blew a hard gale at S. by E., freezing withal, but not ſo hard as two days before.

Monday, the thirty-firſt, we had as much wind as the day before, and from the ſame point, but dry over head, and freezing to extremity. There was a hogſhead that ſtood on end upon the deck full of water, with its head open, which froze gradually downward, ſo as to force the bottom out, and raiſe the caſk three inches from the place it ſtood on, and became a whole column or ſolid body of ice: another, at the ſame time, that laid along with its bung open, froze in the like manner, burſting open the undermoſt ſtaff upon which it reſted. I leave to the reader to aſſign the natural reaſon of this, only taking along with him this remark, that it lay upon a pretty thick ice that covered

the deck. How long they had been both filled I cannot ſay punctually: the firſt might be one of them brought on board the Friday before; the other poſſibly had lain longer, as deſigned for a ſea ſtore. This brings into conſideration the daily toil our cook had, with an iron crow, to break aſunder lumps of ice to put into the pot. In doing which he was obliged to arm his hands with fur gloves and mittens, otherwiſe the iron would have cleaved to his fingers, and carried the ſkin along with it. The ſame cloathing or defence our men conſtantly uſed, not only abroad in wooding and watering, but alſo in their work aboard, as handling the ropes, or whatever elſe they touched or moved. Over and above, when they went in the boat upon frequent expeditions, whether for carrying out or weighing of anchors, or going aſhore for the many purpoſes before cited, they put on their Ruſſia boots, which were wide like thoſe worn by fiſhermen, and lined with bear ſkin: theſe they were all furniſhed with, but two or three, who were glad to ſupply the want of them by tying old pieces of canvas about their legs, and over their feet.

Tueſday, the firſt of February, it continued ſtill blowing hard at S. by E., clear withal, and about noon we ſaw the ſun ſhine into the mouth of the harbour: he might ſhew the whole of his face, but little of his power; for it froze ſo exceſſively this day, that the ice hung upon the ſhip in ſome places full two feet thick, and at the edge of the water it was of a great breadth; ſo that the ſhip, having a ſmall motion, made ſuch a noiſe, that the night before we could not ſleep for it. To prevent which we hauled the long-boat about the ſides, and with two great beetles or mauls broke it off; and ſometimes a piece of half a ton weight would drop at once.

Wedneſday, the ſecond, it blew hard at S., with clear weather, but froze ſo very hard that now all the cables were paſt handling; which mightily diſcouraged us, and almoſt ſtifled all thoughts of going. To mention all the diſcourſes our people had at times, upon ſeveral occurrences, would fill a bigger volume; and a great many more I had ſet down, had it not been ſo great a trouble to write. 'Twas vexatious enough to get my ink ready for uſe, and no leſs to keep it ſo, a boy being forced to thaw it as oft as I had occaſion to dip my pen.

Thurſday, the third, all the night paſt ſtormy, and the wind ſoutherly, but it froze not ſo hard as the day before; we got a boat load of wood, and another of water. As moderate as the weather was for cold, poſſibly on ſuch a day we might get the water on board in the hogſheads with little or no ice on the ſurface of it; but after ſtanding half an hour upon deck, we ſhould have it thick enough to bear an empty pipe. This was a warm day comparatively, I ſay, and cheriſhed our dying hopes of getting from this place; and towards night we got up our fore-topmaſts, fore-yard, and mizen-yard, to be in readineſs for the ſea.

Friday, the fourth, in the morning, it blew a hard ſtorm at S., ſo that I was compelled once more to ſtrike our yards and top-maſts; but towards night the wind eaſed, and we got our ſtream cable on board, leaving a piece of twenty fathom behind us, ſo deep buried under the ice on ſhore as not to be got out.

Saturday, the fifth. This day began with fine weather, the wind at S. S. W. Our men diſcovered ſcallop-ſhells near the ſhip, but they lay in deep water. I cauſed a broad flat piece of iron to be bent, like a dredge to fiſh for oyſters with, and ordered a bag to be made to it of rope-yarn; and that night we went a dragging and got ſixteen ſcallops, which were very good victuals. I brought home with me ſome of theſe, and ſeveral other ſhells, of which I careleſsly diſpoſed of, or loſt the moſt part; but when I waited upon that ingenious and worthy perſon, Mr. *James Petiver*, apothecary, in Alderſgate-ſtreet, and fellow of the Royal Society, to preſent him with thoſe few I had remaining;

from them and others he ſhewed me, I remembered they were almoſt all of ſuch kinds as are found about England: and by him I was further informed, that the general Engliſh names I had given to them were not improper; more diſtinctly he told me they were perriwinkles, wilks, Scarborough couvins, limpets, muſcles, cockles, ſea-eggs, &c. Oyſter-ſhells too I ſaw here and there, but not one whole, with the inwards or meat in it. I left with him likewiſe a piece or two of coral, got when we dragged for theſe ſhell animals, having ſaved greater variety of the ſame, which an unlucky boy threw overboard. Moreover ſome ſlate-like ſtones, and theſe I obſerved there of various colours, which when we held againſt the grindſtone, tinged the water (it turned in) ſtrongly of the ſame colour. And in ſome colour-ſhops, where I expoſed them here in London, they concluded them fit for painters' uſe, and of good value; ſo that this wretched country was not deſtitute of all human food or commodity; and had I been there in a ſeaſon when the ſnow was gone, much more might have been obſerved; or even then, had I made it more my buſineſs to diſcover what was odd or rare. Towards night the wind came to the N. N. W., blowing hard, and ſnowing.

Sunday, the ſixth, it proved fair and clear till three in the afternoon; then the wind ſhifted from the N. W. to S., and began to blow and overcaſt.

Monday, the ſeventh, it blew hard in the morning at N. N. W., and from thence the wind ſhifted to W. S. W. I took now into further conſideration the quantity of proviſion I had left, and finding not above two hundred and three pieces of beef, and peaſe proportionable; and ſeeing no likelihood of getting any other relief while we ſtayed here, than what we had met with, I put my men to ſtraighter allowance, viz. ſix men to a piece of beef a day, and a pint of peaſe for four men. And to prevent all diſcontent and murmuring, I kept myſelf, as I had done all along, upon the level with them, giving them leave to take the firſt piece in choice, and I the ſecond for my own meſs. Withal I encouraged them daily to get what proviſion of ſuſtenance they could from ſhore: having finiſhed our drag, and fixed two nets for catching ſea-eggs, of which we got this day three buſhels. Theſe were the means of tempering, as well as ſparing our ſalt fleſh, which we ſhould have more need of at ſea, where we ſhould be bereaved of the helps this harbour afforded us. Alas! had we but ſtore of proper and cheriſhing food, our ſufferings from the cold would have been eaſily borne, by ſo many hardy and luſty men as I had then on board, with the plenty of firing we met with. Nay, had I been ſo lucky as to have brought, what I uſually did in former voyages, quantities of Ruſſia hams and neats' tongues, they would have afforded great ſupport under ſuch woeful diſtreſſes. But to heighten the misfortune, I was baſely diſappointed at my coming away of a thouſand weight of ſtock-fiſh, which I had agreed for, to take with me as ſhip proviſion. Strong Ruſſia beer too (not to mention high wines and brandy) had been comfortable drinks in cold days, as I found by that little I had in bottles, which I kept buried up in ſtraw, and preſerved moſtly from the froſt thereby; howbeit now and then the boy fetching a bottle, would bring the neck in one hand, and the bottom in the other, without ſpilling any, perhaps one of the uppermoſt, and not well covered. And I cannot forget, what I have more than once taken notice of, that a bottle of beer ſtanding behind us, while we ſat before the fire, would contract ice in the time we were drinking it.

Tueſday, the eighth, the weather was fair, and ſomething warmer, the wind being at the S. W. I got my ſheet anchor and beſt bower on board, and made all clear for the ſea, riding only by our ſmall bower and one cable aſhore. In the evening our men dragged, and uſed their nets, getting ſome ſcallops and two buſhels of eggs, to our great relief. This day we firſt pumped the ſhip, having in her about nine inches of water; neither

neither had we occaſion to do it afterward, which was a happineſs, by reaſon we could not have kept our pumps clear without a good ſupply of hot water; beſides, the doing it often would have fatigued our men.

Wedneſday, the ninth, in the morning, it blew a ſtout gale of wind at W. by N., with ſnow; but at noon the wind was at W. S. W., with ſqualls of ſnow. We got a boat of wood and water, and carried a ſhank of lines, with twenty hooks, out into the *fuel*, and left them all night, to ſee if we could take any fiſh therewith.

Thurſday, the tenth, we had fair weather in the morning, and little wind; ſo we fetched on board our lines, with the baits entire and no fiſh. Before noon it blew a ſtorm out of the W., with abundance of ſnow, which obliged me to let go my beſt bower under foot: it continued to blow till midnight, and then the wind eaſed.

Friday, the eleventh, in the morning, it was fair, and the wind ſoutherly: towards noon it fell a ſnowing, and blew very hard at S. S. W.; in the evening it froze ſmartly, with abatement of wind, inducing me to heave up my beſt bow-anchor again; but a great ſnow followed, and bad weather all night.

Saturday, the twelfth, it continued blowing very hard at W., with much ſnow in ſqualls; ſo I was forced to let drop my ſheet anchor under foot. We had two cats on board, whoſe lives we endeavoured to preſerve by giving them freſh meat of ſea-eggs, and muſcles, &c.; but they grew weaker as the cold continued, and died of the cold, ſtarved, one now, and the other a week after, even at our feet, and before the fire.

Sunday, the thirteenth, it continued blowing very hard, the wind at W. N. W. and N. W., with much ſnow, and violent guſts of wind.

Monday, the fourteenth, we had not ſo much wind on this as the laſt two days, yet it was far enough from being calm. I heaved up my ſheet anchor and brought it on board; got a boat load of wood, and another of water.

Tueſday, the fifteenth, the good weather in the morning invited our men aſhore to gather perriwinkles and dills; but by ten o'clock it began to blow a ſtorm at N. W. by W., ſo that they could ſcarce get aboard again. At three in the afternoon one of our men departed this life: he was under thirty years of age, and taken firſt ſick at Archangel, of a diſtemper like an ague, continuing ill ever ſince we came away from thence, and declining till this time. Neither can it be ſaid he died of the cold merely, ſuch as do ſo (as I have been told) going off ſleeping; whereas he expired gradually and ſenſibly, as I have ſeen others breathing their laſt: could we have got home in good time, he might poſſibly have recovered. The continuance of the ſtorm made us let fall our beſt bow-anchor.

Wedneſday, the ſixteenth, the morning was fair, ſo we heaved up our ſheet anchor, and buried our deceaſed man at low water mark; for higher up on the dry ſhore the ground was ſo hard frozen, that we could not dig it. We got a boat of wood and water, and put the dead man's cloaths to ſale at the maſt; ſo our cuſtom is at ſea in the like caſe. In the evening the wind came to the S., blowing and freezing extraordinary hard, with ſqualls of ſnow; afterwards it ſhifted to N. N. E., continuing ſtormy all night.

Thurſday, the ſeventeenth, it grew calmer towards the morning, but it ſnowed much, and froze very hard all day, the wind continuing at N. N. E. till midnight, and then came to the W., and in the morning following to N. N. W.

Friday, the eighteenth, the weather moderate enough as to wind, but ſnowing and freezing ſo prodigiouſly, that our men, who went aſhore to get perriwinkles and dills, were forced aboard in a ſhort time, being not able to endure the weather abroad; and ſome of them were ſo benumbed with the cold, as to be incapable of helping themſelves to climb the ſhip's ſide, ſo that others were forced to help or hand them up: but ſoon after

after they got aboard they recovered, the ſhip being hot like a ſtove, compared with the open air. I remember for ſeveral days I could not bear the ſharpneſs of the air, walking upon the deck, but was glad to clap my handkerchief double over my mouth and noſe for a defence. You muſt know that for theſe four months paſt, ſince we came in here, we ſuffered our beards to grow at length for warmneſs, which would be often full of icicles, from our breath congealed, after the expoſing ourſelves for a little while upon deck; but approaching the fire they came off eaſily, whereas to have pulled them off before, had been to bring hair and all.

Saturday, the nineteenth, we had little wind this day, and that at N. W., but much ſnow, and froſt ſo exceſſive, that it was impoſſible for a man to look to windward. In the mornings, after ſuch bitter nights as we had at this time, the glaſs windows of my round-houſe, where I lay, would have ice upon them of the thickneſs of a crown-piece; ſo that we were forced to ſcrape it off with a knife to let in the light. The great cabin windows we kept ſhut up with boards nailed without, as well for the preſervation of them againſt weather, as warmth for the ten men I lodged there conſtantly. The round-houſe I reſerved to myſelf, though much colder; but I kept that in regard to the proviſion I had ſtowed therein. And to make known to them that I had ſhared the ſufferings with 'em, I ſhewed them my bed, which was frozen to the boards on each ſide, that I durſt not allow the boy to ſtir it for fear of tearing; thus for five months I left it, and went to it morning and night, not pulling off my clothes ſave for ſhifting, only putting on my fur gown at my ariſing, and plucking it off when I laid down, to throw over me, together with the rugs and blankets. And long ſince finding the inconveniency of going from the fire in the ſteerage, where I reſided by day, to my lodging at night, by reaſon of the ſnow that laid on the quarter-deck, I ordered the carpenter to caulk up the round-houſe door; ſo I made my paſſage by a ſcuttle, or ſally-port, down into the great cabin, and by that means obſerved the order they kept below me. As I lay in my bed I could diſtinguiſh and tell every nail in the cieling or elſewhere, either head or point, having a piece of ice like enamel upon it; I ſuppoſe from my moiſt breath condenſed and froze. My books too, that ſtood upon a ſhelf over my head, had upon their edges and corners the ſame ornament; a ſight I cannot ſay whether more pleaſant or diſmal.

Sunday, the twentieth, 'twas calm, with much ſnow falling, and continued froſt; notwithſtanding I got up our fore-yard and mizen-yard in the evening, in hopes of an E. wind; but by night it came to W., continuing fair.

Monday, the twenty-firſt, this morning was calm and fair, after a ſerene and ſharp-freezing night; ſo that we could not but obſerve the ſurface of the water in the bay about us to be covered with a hard ſcum or thin ice, which made us fear being locked up; but immediately the wind ariſing at W., broke it all away. We got a hogſhead of water, and knocked off the ice round the ſhip at the edge of the water; and in the evening our men went aſhore for recruiting their freſh proviſion; and towards night it blew ſo hard, that I was forced to lower our yards down again.

Tueſday, the twenty-ſecond, the day began with good weather enough as to wind, only we had ſome ſqualls of ſnow; it froze too, but very moderately. We got a boat of wood; and our men going up the hill a great height a wooding, ſaw the body of the ſun, reporting it when they came aboard with great joy; and indeed it was a ſight for them to rejoice at, having never ſeen it ſince they came into this harbour. For it muſt be conſidered we lay low in the water, that we had leſs light for that reaſon; yet was the want of that compenſated by a more benign temperature of the air as to cold, than we ſhould have found upon any part of the ſhore. For I am perſuaded that no houſe

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we might have made there could, with the ſame manner of warming it that we made uſe of in the ſhip, have preſerved us ſo well. Beſides a coldneſs perhaps from the earth itſelf; I am ſure a ſmall height in the atmoſphere makes a ſenſible variation as to heat and cold in the ſame place; not to offer at any reaſon, but our men found it ſo by daily experience, when they made but ſmall aſcents in wooding and watering. And the mountains, or greater hills which lay about us, being, as near as I could gueſs, above three hundred fathom higher than the ſurface of the water in the bay, ſeemed to have endured the utmoſt force of the froſt, having crowns or caps of ice, three or four fathom thick in ſome places, and over-hanging like a pent-houſe or precipice, with a horrid proſpect at a diſtance.

We took two turns off the hawſe, cleaned the ſhip's deck of ſnow and ice, and cleared the ſcuppers. At midnight it began to blow a ſtorm at S. W.; but towards morning the wind came to the N. W. by W., the ſtorm continuing, ſo that I was forced to let fall my ſheet-anchor.

Wedneſday, the twenty-third, the wind held hard at W. N. W., with much ſnow; about ten in the forenoon the wind came to N. E. by N., continuing to ſnow. At noon we heaved up our ſheet-anchor, the wind eaſing; but in the evening it came more out of the bay. This day, as I was walking upon the deck, came a fox upon a ſmall hill over againſt the ſhip, and ſtood awhile looking upon us, but ſoon ran away at a little noiſe we made.

Thurſday, the twenty-fourth, we had the wind at S. E. in the morning, with a gentle gale, but freezing extraordinary hard; howbeit we got a boat of water, and cleared our decks from ſnow and ice. At noon the ſun ſhewed itſelf upon our maſts; I got my fore-top-maſt up, with my mizen-yard and fore-yard, and towards night the wind ſouthed. I then made a ſtrict ſurvey of all our proviſion, ſhifting it out of one caſk into another, that I might be certain how much there was, and found but one hundred and fifty-four pieces of beef on board. I gave to each of our men a pound and a quarter of honey, for the uſe ſo often mentioned before. Some of them had been aſhore this afternoon to get dills and perriwinkles; but the weather was too cold to be endured, and they were forced to return on board preſently.

Friday, the twenty-fifth, by break of day, the wind being eaſterly, I got all my yards and top-maſts up, and the men went aſhore to caſt off the cable, with a full reſolution for ſea; but before they could clear the ice, and come to caſt it off, the wind came to S. W. and W. S. W., beginning to blow and ſnow. Before night I was forced to ſtrike both my top-maſts, and lower all down again ſnug; and at ten the ſtorm was ſo furious, that our men were contented to abide here, notwithſtanding their late earneſtneſs to be going, acknowledging it a mercy from heaven to be detained.

Saturday, the twenty-ſixth, the wind was grown moderate by the morning, and at noon 'twas quite calm: we took two turns off our hawſe; and in the afternoon got a boat load of wood; the ſkiff too went a dragging, getting but fifteen ſcallops. This mild day gave us opportunity to obſerve that the ſluices or drains of water that fell into the bay were ſo conſiderable, as to make a ſmall motion toward the ſea at low water.

It is to be noted, we had no river running into this harbour, or any which we call back waters, but the fore-mentioned drains, all of them not being ſufficient to ſupply a current. It flowed S. W. at a full and new moon, riſing and falling at neap-tides about eight feet, and at ſpring tides about twelve or fourteen. How it was in the *fuel* we can give no poſitive account; but by my obſervation upon ſome points, the tide did ſeem to move indifferently ſtrong; for when I was out with the boat I perceived ſome riplings, and our men in ſearching fell in with pretty ſtrong tides, but could not

inform

inform me diſtinctly. Above all things I well remember, the whole Finniſh people, when they came aboard our ſhip, told me there was never a rock or dangerous ſhoal in the whole *fuel*. And I have taken care to have the depth of water and anchoring places marked in the chart faithfully, according to the ſeveral diſcoveries made by me and my mate, and the diſtances of places computed with the beſt of my judgment: to which I refer the reader. Towards night the wind ſouthered, blowing and freezing hard.

Sunday, the twenty-ſeventh, we had a ſmall ſnow falling all day, but ſo very mild withal, that it melted as it fell, and that likewiſe that which laid before upon the ſhip; and toward night it turned to rain with the wind at S. W.

Monday, the twenty-eighth, the morning was ſtormy, the wind at W. ſo that I was neceſſitated to let go my ſheet anchor; but toward noon the wind eaſed, and I heaved it up again. I called all my company together, and told them that the time had ſpent ſo much of our proviſions, that we could not venture to ſea, with what we had remaining, where we ſhould be bereaved of all the little comforts and helps we had from the ſhore. And therefore while we had any thing left, we muſt go and make ſearch for people, whereby to get proviſion, to carry us out of this place, and to our much deſired homes.

That ſince Almighty God had wonderfully preſerved us till this time, when the weather was grown more moderate, and the days of a brave length; we ought not only to expreſs our thanks in words, to that Being of all goodneſs, for our preſervation paſt, but to be active and induſtrious for the future, ſhewing ourſelves thereby more reaſonable creatures.

And finding ſuch diſcourſe to have ſome effect upon them, I ordered the long boat to be immediately hoiſted in and guawked and other things done, that might be for the ſafety and convenience of the men in her. It proved a fair day and thawed, whereby we got one ſide graved in a few hours, fitted her ſails, and put many things in readineſs.

Tueſday, March the firſt, the month and day began with fair weather; and after we had made an end of trimming the long boat, and got her out, we went all hands aſhore, to get what we could for the belly: and towards night got our yards and top-maſts up, reſolving to keep in a moving poſture.

Wedneſday, the ſecond, it began to blow hard at W. S. W., and ſo came to S. a violent ſtorm; inſomuch, that we were forced to ſtrike both yards and top-maſt down again: but towards night the wind eaſed, and it froze at an exceſſive rate. This day the ſun ſhined on board the ſhip over the hills; it being the firſt time of my ſeeing the ſame ſince I came in here, being ſeventeen weeks. Note, that though the ſun at this time did not remain above the horizon, quite ſo long as it does in England, and its meridian altitude but little, yet this day was even as long, conſidering the more early day break, and the more laſting twilight in the evening. And who knows not, that upon the tenth of this month, the days and nights are equal all the world over.

Thurſday, the third, it proved a very fair day, with much ſun-ſhine and little wind; we had not ſeen the like before in this place. This put ſuch life in our men, that they got up our top-maſt at once, and looſed the ſails for drying them; they having continued ſtill folded up now for ſome time; and according to our expectation they were found well: here being no fear of their getting heat to rot them. In the afternoon our men went on ſhore to get dills and perriwinkles, ſome dragged in the long-boat and got ſcallops, and others in the ſkiff with their nets, made good purchaſe of ſea eggs. When night came on, I could not but obſerve our people as buſy, as they are uſually in a cook's

a cook's ſhop about the *Exchange* of London, between the hours of twelve and two: only with this difference, that every man was there both gueſt and ſervant. This with a kettle, that a ſaucepan, and the other a diſh or platter; ſome dreſſing dills, ſome ſcallops, muſcles, and perriwinkles, and others boiling ſea eggs in broth; and ſome were brewing of mead; ſo that at both hearths there was ſcarce room enough for one to get in between to light a pipe, I cant ſay of tobacco, for there was none but what I had; what the men ſmoked for ſuch, they took as much pains to prepare, as to cook a diſh of meat.

Friday, the fourth, in the morning the wind was at W. S. W. a ſtrong gale, with clear weather, but at noon it ſnowed: however we got a boat load of wood. Toward night fell little wind and that at N. N. W.

Saturday, the fifth, it proved a hard ſtorm ſoutherly, ſo that I was forced to ſtrike our yards and top-maſts, and let fall our ſheet anchor; it freezing very hard all day, with clear weather over head.

Sunday, the ſixth, we heaved up our ſheet-anchor again, the day beginning with little wind, and continued handſome weather till eight at night, when the wind came to S. S. W. and it fell a ſnowing.

Monday, the ſeventh, it blew hard in the morning at W. S. W., and a great ſea came tumbling in, which obliged us to let fall our anchor again. At noon it abated, and came more weſterly; at eight at night, we had a ſtorm at N. N. W., but blowing dry and indifferently warm.

Tueſday the eighth, the day broke with little wind, but that running from E. to S. and S. W. and to W. S. W., and then a freſh gale, but dry and warm. We got a load of wood, and filled a caſk of mead, for the men that were to go in the boat. At this time I found all of our men complaining of pains in their bones, which my chirurgeon did conclude, were the effects of the froſt in their limbs; generally remarkable upon the abatement of the weather: which we found true, obſerving upon the return of extreme froſt, we were without ailment, but upon a thaw, we felt the ſame pains again. The like indiſpoſition I experienced in myſelf, at ſuch times.

Wedneſday, the ninth, the fairneſs and calmneſs of the weather gave us an opportunity of getting two turns off our hawſe, heaving up our ſheet anchor, drying our top-ſails, and fetching three hogſheads of water; we likewiſe fixed a fire hearth in our long boat, which we made two days before, and fitted a ſail to ſpread over the ſame, if they ſhould be forced to lie in her; and got all things ready to ſet her forth at half an hour's warning. The wind came to S. S. W., the ſky looking ſqually, but proved very fair.

Thurſday, the tenth, we had good weather in the morning and a ſoutherly wind, I cauſed all my men but four, (who were ſick or unſound,) to caſt lots who ſhould go in the boat, and they fell to ſix as able as I could have picked out: howbeit, two of them bought it off with two others, for ten ſhillings each, to be paid them, when they ſhould receive their reſpective wages, at the end of the voyage. My mates drew by themſelves, and the lot fell to my ſecond mate; a man fit enough for the buſineſs. I immediately ſent them away with money, linen cloth, and other things which I judged might be fit for traffic with the inhabitants if they ſhould find any.

Towards noon the wind came weſterly with much ſnow, withal freezing hard, but handſome weather of wind: and at eight at night it came to the N. N. W., and brought back our boat again, having made little diſcovery.

Friday, the eleventh, the wind was ſoutherly, and the morning fair; ſo I ſent the long boat away again on her former errand. With thoſe I had on board, I got a ſkiff

of wood; I mean the ſoundeſt of them, for the reſt had the froſt in their feet or hands. The wind continued in the ſame quarter all the afternoon, but at night blew very hard.

Saturday, the twelfth, it blew hard at S. S. E. and froze ſharply all day.

Sunday, the thirteenth, it blew freſh at S. by E. all day, but dry over head, with a hard froſt.

Monday the fourteenth, the weather was very uncertain, ſometimes ſqually, now high wind, and then fair and clear. While it was ſo, all that were aboard and able, went aſhore gathering dills and perriwinkles, and ſuch as they could get for the belly.

Tueſday, the fifteenth, in the morning it proved fair and clear, ſo that ſome of our folks went aſhore to ſeek for proviſion, and others continued in the ſkiff, dragging for ſhell fiſh. Thoſe upon land happened to eſpy two boats coming into the bay, and rowing towards the ſhip. They preſently imagined them to be ſome of their company ſent out four days before, and fell a hollowing to their fellows in the ſkiff; which ſo affrighted the people in the boats, that they immediately turned about and made away. And though I called to the ſkiff with all ſpeed to come aboard, and ſent a man to the point to ſee for them, yet ſuch haſte they made, as to be out of ſight before he came. Soon after ſome of them appeared upon the point, and continued looking upon the ſhip a good while. In the meantime I ſent a man up one of the hills, to diſcover which way they went, but he returned without being able to give any account of them. So we loſt that opportunity of commerce with them, who then if they had not been unluckily ſcared by noiſe, would doubtleſs have come on board us of their own accord: for the ſhip lay, in a manner, between them and our men in the ſkiff and aſhore; and I gueſſed they where wholly taken up with the ſight of the ſhip, where by my order, we lay ſilent and hid: and for the future I commanded every one to be ſo, upon the like occaſion. Theſe people, we ſuppoſe, were coming to take their ſummer habitation, in the houſes we deſcribed before: for to me it ſeemed, as if there were cattle and children in the boat, but I could not, by all the inquiry I made, of thoſe whom I ſaw afterwards, learn who they were, or whether I gueſt right of their intentions. In the afternoon it blew freſh at S. S. E. however we filled three hogſheads of water.

Wedneſday, the ſixteenth, all the forenoon was calm and fair, which our men ſpent in dragging for ſcallops and ſea eggs, and gathering dills and perriwinkles at low water.

At noon I took boat and rowed out to a hill, lying at the mouth of the harbour, and went up as high as I durſt venture, to look about the *fuel*. And S. of us I thought I ſaw ſeveral iſlands, but could not diſcern the bottom of the *fuel*, which ran in very far and wide.

Thurſday, the ſeventeenth, it continued fair, and our men went on ſhore a wooding, but had not been gone above two hours before they diſcovered a yawl coming towards the ſhip; and according to the order given before, we let them come aboard us very ſilently, expecting it was one of the boats we ſaw two days before. But it proved to be a yawl that came from the North Cape, with four of our own men in her, and one *Finlander*; ſent by my mate to ſatisfy me, how things ſtood there with the long-boat. And indeed it was high time to releaſe me from the fears I was in about them. He ſent in her a barrel of beef, a barrel of rye-meal, forty pounds of oat-meal, eighty pounds of ſtock-fiſh, with other proviſions of fleſh, viz. mutton, pork, and veniſon, all dried; and a ſmall caſk of beer. They likewiſe brought us the news of a peace concluded between England, the reſt of the confederates and France: and gave me the following account of what happened to them from the time of their departure. "After we had ſailed to

the other ſide of the *fuel*, we got ſight of a little yawl, and gave her chace, having the wind of her, and it blowing freſh. They made for the ſhore, and juſt as they landed we fell in with them. There were but three men in the boat, who got out and ran for it upon the ſnow, two of which our men could in no wiſe overtake, but the other they caught: he was an old man, and they were his ſons. Our crew treated him civilly, and having two Daniſh men born in the company, they fell to diſcourſe him, and ſoon ſettled a right underſtanding between one another; that he immediately called the young men, that ſtood a loof off to ſee what would become of their father. They readily obeyed, and parlying with them altogether, our men offered them two dollars, if they would conduct us to a prieſt's houſe, or ſome town, where we might get proviſion for money or goods. So they came to an agreement; the old man and one of his ſons forthwith ſtepping into our boat. But we having a briſk gale, in towing the yawl after us, pulled her ſtern in pieces, and ſo were forced to caſt her off; the old man bidding his ſon that was in her, to go aſhore, and directed us to keep on our way. This we did till we came to the outermoſt point, where we went aſhore, finding there ſome houſes, and about four families; the hamlet or village being called by the name of *Swetwel*. In this place we took up our lodging all night, and the day following being ſtormy, we durſt not put to ſea. All this time we received kind entertainment from the inhabitants, and our company likewiſe were as free of what they had to them. The day after being Sunday, we parted from them, and with all ſpeed made for the town of Colwitch upon the cape, where we arrived by two in the afternoon, the people being at church. After ſermon they came all and made much of us, hearing our ſtory, and admired that we were able to live on board, in ſo extraordinary hard a winter: for ſo it was accounted with them. They ſeemed very kind to us, till the miniſter and the merchant fell out, about ſelling our proviſion. For one ſaid it belonged to him, and the other as much; but between them both, we were furniſhed at their own rates, being glad to get it any way. It happened at this time, there was one from the governor of Wardhouſe, who came to look after the ſalvage of a Dutch fly-boat, that was loſt in the ſame ſtorm, that drove us in," &c. and from him they had the goods news of a peace.

That night I diſpatched away the ſame boat again, (which was a yawl belonging to ſome of the town, of whom our people had hired it for four dollars,) and ſent her to the ſame place upon the cape, with more goods and money for purchaſing more proviſion; with order for my own long-boat to return on board, with all convenient ſpeed. Yet as I underſtood afterward, they were in great danger of being loſt, had not one of the inhabitants coming along with them, and knowing the coaſts well, happily directed them to a place of ſafety, during the ſtorm they met with.

Friday, the eighteenth, in the morning it blew a ſtorm at S. S. E., but towards noon it abated, yet ſnowing much till five in the afternoon; becoming then fair and clear, with little wind, and that ſhifting to W. S. W.

Saturday, the nineteenth, we got a boat's loading of wood, it continuing calm and fair till five in the afternoon; from which time it ſnowed till eight at night: but all the while moderate as to wind.

Sunday, the twentieth, in the morning came a yawl from the miniſter's houſe, that lived fifteen miles from us, towards the North Kyne; and in her a clerk or ſecretary of the governor's, that reſides at Wardhouſe. This perſon was the ſame that our men before had told me of, who came now on purpoſe to ſee me, after he had croſſed over the *fuel*, to make his returns; his way being then all over land, and that upon the ſnow. He told me, that he boggled neither at mountain or valley, but could go in fourteen hours time ſixteen Daniſh miles, which make ſixty-four of ours. And ac-

cordingly ſhewed me how he was fitted for ſuch a journey, having with him a leathern canoe in the faſhion of a weaver's ſhuttle, only turned up more at the ends. This was carried in his boat, when he went by water, but at land it ſerved as a ſledge does in Holland when the rivers are frozen; having three iron keels at the bottom, and being drawn by a rein-deer. It had a covering like a deck, with a hole in the middle, coming cloſe about his waſte: ſo that with a fur coat over the upper part of his body, and other clothing beneath, he was well provided againſt the worſt of weather. In his hand he carried a paddle or ſmall oar to keep him from overturning. In his way are no inns, but he makes his night's lodging at ſome miniſter's houſe, where he ſtill finds free quarter.

He informed me of two Dutch ſhips that were forced into the harbour of Wardhouſe by the ſame ſtorm that forced me in, where I then lay: that he ſuppoſed they were now going to ſea, their men having laid on board in order thereto three days before he came from thence. I thought that might very well be, conſidering the great advantage they had of me, being at the principal town of the whole country, even where the governor himſelf lived; where they could want for little, but had good Daniſh houſes with ſtoves in them to keep them warm. And one thing this gentleman told me, too conſiderable to omit; viz. that from Wardhouſe aforeſaid there went a poſt to Copenhagen every fortnight. So that if any ſhip be forced in there or thereabouts by ſtreſs of weather, finding a miniſter's houſe, they may ſend to the town, and from thence to any part of Europe.

In this boat came the miniſter's ſon, who brought both dry and new fiſh, and pretty good ſtore; with ſeveral preſents from his father; as a calf new killed, with cheeſe and milk for my men; alſo dried mutton, and hams of bacon, veniſon, and partridge.

Monday, the twenty-firſt, it blew freſh at S. all day; notwithſtanding there came a Finniſh boat on board me, and brought me ſtore of fiſh and dried mutton, with a ſmall parcel of freſh butter and cheeſe. I bought all they had, but ſome veniſon and partridge, which, at their going away, they preſented me with; I giving them in gratuity ſuch as I had; viz a few raiſins, (a great rarity with them,) and ſome mead. Their veniſon was lean and horridly black, but the partridges were dainty, being freſh killed and fat.

Tueſday, the twenty-ſecond, it proved a ſtorm; the wind all ſoutherly, withal freezing hard; but dry over head.

Wedneſday, the twenty-third, it was ſo fair and calm, that we cleared our hawſe. This day came another boat on board, and brought us fiſh of ſeveral kinds, both dry and wet; viz. cod, ling, and turbot; ſome butter and cheeſe, with dried fleſh of the ſorts aforeſaid. *Note*; That this meat was not ſalted, but prepared thus for keeping by being hung up in their chimnies. It had little of goodneſs or nouriſhment, and ſcarce appeared to ſwell by boiling. But I took all they had, in truck for cloth, and clothes made up; and ſome I bought with money. The boat they came in was of the faſhion of a Norway yawl, big enough for ſix rowers, and ſo many they had: but ſome others had but four, being leſs; and likewiſe there were for two only. The people are low of ſtature, of limbs well ſet, freſh coloured in the face, though of a dirty hue, and an ill ſmell attending them. But whether it is from their lying in their clothes, or their natural ſavour, perhaps derived from their conſtant diet upon fiſh, I could not determine with myſelf. Their hair is generally light coloured and lank, cut like the Danes: they wear their beards of a full growth, young and old; their habit too is like the Norwegians, viz. cloſe breeches, ſhort coats, both made of coarſe cloth, with caps of the ſame furred. Their ſhoes are pulled up half way on their legs like boots,

with toes turning up like the tip of a half moon painted, and furred within. One thing peculiar in this people's garb I obſerved, and that was, they every one carried a ſmall powder horn, hanging under their chins, by a ſtring about their necks, for what uſe or purpoſe I could not learn, though I aſked them as well as I could, but could not explain their anſwers; for my Dane that remained on board, was then, as I thought, at the point of death; that is, ſo weak as not to do the work of an interpreter. The governor's man too, could not ſpeak Dutch enough to be intelligible to me, when I enquired into the ſame thing three days before, though I underſtood he was a German born.

Thurſday, the twenty-fourth, it proved fair, the wind at S. W.; we got a boat of wood. Towards night it weſtered, and about eight our long-boat returned on board, and brought with them a barrel of beef, a barrel of rye meal, and three hundred weight of ſtock-fiſh, with other proviſions which we wanted; viz. ſome dried mutton, pork, and ſome bread alſo, with butter and cheeſe, to our great comfort; we being therewith ſufficiently ſtored for the ſea. And from them I took this following relation: That the town of Colwitch on the cape conſiſted of about fourteen houſes, with as many families, and one church. The houſes are built after the Norway faſhion, of wood, with ſtoves placed in the middle, or ſo as to warm the rooms, without the ſight of fire; they being a kind of ovens, and are heated after the ſame manner. Their houſes have windows of glaſs, but with wooden ſhutters, both inward and outward, which they make cloſe in the winter, by ſtopping or caulking them with moſs. So they keep up ſeveral weeks in the dark and cold ſeaſon, burning great tallow candles continually; ſome of which our men ſaw. The church was of the ſame materials with their houſes, being one room, able to contain about thirty perſons. Four or five of theſe churches or chapels are ſerved by one teacher about three times in the year; (for it is to be ſuppoſed they only congregate in the ſummer.) They are uſually placed about five or ſix miles off each other, or nearer, according as the country is more or leſs populous. But one paſtor lives generally fifteen miles from another, who is maintained by every tenth fiſh; and where he reſides not, he empowers one to gather the tithe as they take them. By this means they are furniſhed with merchandiſe, which they ſell or exchange for other things they want, with ſhips that come yearly to their port town to fetch them, and bring goods accordingly. Hence they come to be the moſt wealthy and conſiderable of the people. They are lawyers, juſtices of the peace, and cuſtomarily ſole in authority. For their education is the moſt liberal, being, as I was informed, in a ſchool or petty univerſity in Norway, near Drontheim. They too obſerve the greateſt hoſpitality; all travellers being entertained by them, and furniſhed with ſleds or rein-deer, from one to another: the like alſo was I told by the governor's man before, when he informed me of their way of travelling. They breed cattle of a ſmall kind, with goats and ſheep, and ſwine alſo. The former are fed in the ſummer with graſs, of which they have plenty at that time; but in the winter they gather rock-weeds at low water, and boil them in coppers made for the purpoſe, to take the ſalt out; and then give them to their beaſts to eat. They have horſes too of very mean ſtature, who have the ſame food; but the hogs, I gueſs, are nouriſhed by fiſh, by reaſon the dry pork they brought me had a ſtrong taſte of it. Their cuſtoms and manners are much like thoſe of the Danes, under whoſe dominion they are; and every man from fifteen to ſixty is taxed at two dollars each, which they pay yearly, either in fiſh or money, to the king of Denmark's collectors: and for that they have a ſeeming protection, and a liberty of living where they pleaſe; which in ſummer is up and down the country; but in winter they retire to their joint habi-

tations

tations fitted up ſuitably. Their religion too is Daniſh, being of the Reformed Lutheran church, in belief and diſcipline; their ſermons being preached, and their divine ſervices performed, in the ſame language. So that, though they have another language antient and native in the country, yet they underſtand and uſe the Daniſh moſtly. As to their women I can ſay but little, not ſeeing any myſelf, nor did the men I ſent pretend to give any account of their behaviour, or how they managed their families. They only told me, that their habit was like the Daniſh women's; but I could not but believe the better ſort of them love fine clothes, as well as our Engliſh dames. For ſending a piece of wrought ſilk of ſeven or eight yards, the miniſter's wife at the cape bought it readily: and, to ſhew how much ſhe was pleaſed with her bargain, over and above the price ſhe agreed to and paid, ſhe ſent me a dozen of partridges and a cheeſe. Her huſband too made me a preſent of a ſmall caſk of beer. Nor was the merchant behind him in civility, ſending me a freſh leg of beef, but killed a month before, and without any ſalt, preſerved by the froſt; and ſome dry mutton withal. And truly they might well enough afford it, conſidering how dearly I paid for my proviſion.

Friday, the twenty-fifth, it held fair, with little wind at S. S. E., betimes in the morning, I called all hands up, and heaved up our ſheet anchor, which we carried out before the long-boat went away, and got our yards and top-maſts up, clearing our decks and ſcuppers from ſnow and ice, and making, that night, all fit for the ſea; having a longing expectation, and great hopes it might be on the morrow.

Saturday the twenty-ſixth, there was but little wind ſtirring this morning, all we had was from the S. E. notwithſtanding to get out, we unmoored, and got a part of our ſmall bower, and our cable aboard, leaving only a towling aſhore to caſt the ſhip. By that time our men had got their breakfaſt, (which was a high word with us then, and we began to ſpeak it cheerfully,) it proved a fair gale at S. W. we heaved up our anchor, and caſt off our hawſe, and got out to the *fuel*, where we found the wind fair and ſoutherly: but eſpying a boat rowing towards us, we laid to, and took her up. In it was the ſame perſon that came before with the governor's man, viz. the miniſter's ſon, a young man about thirty years of age. By him his father ſent me tokens highly acceptable, that is to ſay, a whole calf ready roaſted, a rarity, but not a wonder, becauſe entire; ſeeing it was not much bigger than one of our hares, ready dreſſed in England. Alſo a runlet of beer, with a kid or wooden veſſel of milk, containing above three gallons; which was very ſweet and good. A ſmall quantity of curds too, freſh and tender; with a couple of little thick cheeſes, well taſted, but a little ſtrong of the runnet; over and above, a ham of their choice bacon. I had much ado to force a preſent upon him, his father having charged him not to take any thing of me, that I ſhould want in my paſſage home. At length I perſuaded him to carry his mother a pound of white ſugar, and a pot of honey, and a parcel of raiſins, and preſented himſelf with two ſilk handkerchiefs: ſo we parted, he for his home, and I made the beſt of my way for ſea.

We failed in the middle of the *fuel* for ſafety, ſo that we could make no nice obſervation of the land; beſides we were mightily diſabled for diſtant views by the ſmoke of our green wood fires, which we had endured ſo long. Howbeit we diſcerned the ſhore to lie high on either ſide, with wood upon it in ſome places; but in none ſo much as where we lay: as we had been told before by the people of the country. So that we happened well into a place, ſo plentifully ſupplied with what we could not have lived without.

At four in the afternoon we got out of the *fuel*; by eight at night we were the length of the eaſtermoſt part of the cape. It blew hard at S. S. W. ſo that I was forced to hand both my ſails.

Sunday,

Sunday, the twenty-ſeventh, the wind ſhifted from S. W. to W., blowing ſo hard as to put me by both my top-ſails. At twelve at noon we reckoned the North Cape to bear S. E. half E., diſtant forty-two miles. I made my way this twenty-four nours N. W. half W., diſtance forty-nine miles.

Monday, the twenty-eighth, by ten at night the wind eaſed, and we ſet our main-top-ſail; at two in the morning we ſet our fore-top-ſail, it being handſome weather; at ſix in the morning we ſet our main-ſtay-ſail and mizen-ſtay-ſail. All this time the wind continued ſhifting between S. W. by S. and W. I made my way N. W. three degrees W., diſtance forty-ſeven miles.

Tueſday, the twenty-ninth, we had moderate weather as to wind, and that ſhifting between S. and S. W. by W. I made my way this twenty-four hours N. N. W., diſtance forty-ſeven miles, it being almoſt ſtark calm between times.

Wedneſday, the thirtieth, it blew a ſtout of wind till five in the morning, when it began to abate, and fell a ſnowing, and freezing very hard withal. I tacked to the ſouthward. By twelve at noon it grew calm. I made my way this twenty-four hours W. by N. half northerly, diſtance ſixty-eight miles. This day I got an obſervation, and found myſelf to be in lat. 73° 25′.

Thurſday, the thirty-firſt, it proved very fair weather, but very cold, the wind holding between the S. by W. and S. E., with a moderate gale; and towards noon we had it mighty calm, with a ſmooth ſea: I made my way S. W. half W. diſtance ſixty-ſeven miles.

Friday, the firſt of April, it blew hard, the wind ſhifting between the S. S. E. and W., the ſea going very high; I made my way W. S. W. three degrees W., diſtance fifty-ſeven miles.

Saturday, the ſecond, it continued to blow as the day before, ſnowing at an exceſſive rate, and froze ſo exceeding hard, that all the water that flew into the ſhip became ice in a ſmall time; inſomuch that the ſhip itſelf, both within and without, was completely lined and covered with ice, and nothing about us was fit to be handled. The wind came to the N., ſo we made ſhift to get our main-ſail hauled up, and bound together as well as we could, and ſtood away with our fore-ſail, it looking dreadfully a-ſtern of us; but toward noon the face of things was altered, and I got another obſervation, finding myſelf thereby in lat. 71° 46′.

Then we ſet our main-ſail again, but there was no ſpreading it, it was ſo hard frozen; and to pull it down, we were forced to bring the tackle to our tacks and ſheets, ſtraining them as hard as we durſt, for fear of pulling the ſail in pieces; after all we could not get it above half ſpread: we ſet our ſprit-ſail too, but all the watch, which were ten men, were two hours in getting it looſe. In the afternoon I went about ſetting my fore-top-ſail, but could not get it out of the top by all the ways we could deviſe: I made my way S. W. three degrees W., diſtance thirty-five miles.

Sunday, the third, it was moderate enough as to wind, and that between the N. and E.; but it froze exceſſively. This day, with great toil and labour, I got both my top-ſails ſet, looſing the ſails by degrees, and letting them dry, and bringing the ſheets to the windlaſs with looſ tackles, I got them ſpread: I made my way S. W. by S., diſtance ſeventy-three miles.

Monday, the fourth, we had mild weather this day, the wind ſhifting round, and now and then it ſnowed: I made my way W. S. W. one degree W., diſtance fifty-four miles.

Tueſday, the fifth, the wind came to S., and ſo to W., blowing hard, that we were forced to take in our top-ſails, and at laſt our fore-ſail. At ten in the forenoon we reefed our fore-ſail and mizen, and tacked to the ſouthward; ſo that I made my way W. by N., diſtance but thirty-four miles.

Wedneſday,

Wedneſday, the ſixth, little wind had we all this day, and that running round the compaſs, but the froſt fixed and ſevere: the way I made was S. S. E. one degree E., diſtance but nineteen miles.

Thurſday, the ſeventh, not much wind to-day, but ſhifting between the S. and W. S. W., with cloſe weather; notwithſtanding I made my way S. by E., diſtance twenty-two miles.

Friday, the eighth, the former part of the day it blew very hard, obliging us to hand both our top-ſails; but in the after-part proved ſo moderate that we ſet them again, the wind ſhifting from S. to S. W. by S.: we made our way W. half ſoutherly, diſtance ſixty-three miles.

Saturday, the ninth, it proved ſqually, but indifferent as to wind. We handed our fore-top-ſail twice, and ſet him again as often; the wind ſhifting between S. and S. W., I held my courſe for fifty-one miles W. half ſoutherly.

Sunday, the tenth, we met with hard gales, firſt at S., and then coming to W., which put us under a main courſe: I held on my way S. W. five degrees ſoutherly, diſtance ſixty-five miles.

Monday, the eleventh, it remained ſtormy weather, attended with abundance of ſnow falling, and exceeding hard froſt. I was forced to reef my main-ſail as well as we could, but in a ſorry manner, ſtubborn as it was, and ſo much ſnow lodged in it: the wind was at S. E.; ſo I made my way W. forty-two miles.

Tueſday, the twelfth, the wind came to the E. S. E., and ſo about to N. by W., with a great deal of ſnow, and freezing extraordinary hard: I made my way good to the S. ninety-two miles.

Wedneſday, the thirteenth, good weather enough as to wind, but the ſnow fell very thick. At midnight it blew from the N. W., towards day from the E. and by S., little wind. At break of day it fell quite calm, freezing very hard: I made my way S. diſtance ninety-four miles.

Thurſday, the fourteenth, the wind came to N. E., and then to N. W., blowing ſo very hard, that I could carry nothing but a fore-courſe: we had a great ſea out of the S.; but in the morning I ſet my main-ſail again, after the beſt manner I could; ſo hard frozen was it, that I could not get it above half ſpread, though I lowered my main-yard above three feet down: I made my way S. diſtance one hundred and ſeventeen miles.

Friday, the fifteenth, we had a brave wind from the W. and by N., which made us ſtrive hard to bring our fore-top-ſail to be ſerviceable, getting it off the top, and by mere ſtrength forced open ſome part of it, and ſo ſtood away with it for four hours; after which time it relented, enlarged, and became more uſeful: by which means I made my way S., diſtance one hundred and twenty-three miles.

Saturday, the ſixteenth, it blew a ſtout of wind at N. N. W., ſo that I had made my way S. by W., diſtance one hundred and forty-two miles. By twelve at noon we ſaw Fowley iſland to the E. S. E. of us, diſtant eighteen miles. We had brave moderate weather at this time; and now we heard rats about the ſhip, who began to be intenſe and vexatious to us, in ſeizing upon our new ſtock-fiſh. It is manifeſt they kept cloſe all the cold ſeaſon; but our ſick men who lay below, with my ſurgeon and carpenter, (who was an old man, and kept conſtantly a lamp burning by him) never ſaw any of them, or perceived them in the leaſt to ſtir: how they lived ſo long on board we gueſſed afterward, when we found they had eaten holes in our maſts, and made themſelves places to lie in; and for drink, they could get none but by licking the ice caſks, though nobody ſaw ſuch a thing done by them.

Sunday,

Sunday, the ſeventeenth, it continued fair, the wind at W. At ſun-riſing I ſaw Shetland, and the iſles of *Fair* and *Fowley* altogether, it being very clear ſo early. At ten I diſcerned *Orkney*; and at twelve at noon I took my departure from *Fair Iſle*, which then bore N. from us, diſtant thirty miles, being very fair weather.

Monday, the eighteenth, the weather held as before, but the wind was ſhifting between the W. and S. W. I made my way S. S. E., diſtance eighty-two miles.

Tueſday, the nineteenth, the day began with a freſh wind at W. N. W., and a little before noon we ſaw three ſhips ſteering towards us: whereupon, as not depending upon what the governor of Wardhouſe his ſecretary had told us, or giving entire credit of his news of a peace with France, I cauſed a clear ſhip to be made, and put ourſelves in as good a poſture of defence as we were able.

I furled my ſmall ſails and main-ſail, and by that time one of them came within ſhot of my weather-bow: I fired a ſhot for him to come leeward of me; which he very honeſtly did, and confirmed the news of a peace, to the great joy of our hearts; for, God knows, we were but in a bad condition for managing our guns in a way of fighting. This ſhip was a *Flemiſh* fly-boat, bound to Greenland for whale-fiſhing. We preſently after ſaw more ſhips bound to the ſame place, and two fiſher-boats alſo; but being now out of fear for ſhips, we took no notice of the reſt. I made my way this twenty-four hours S. half W. diſtance one hundred and thirteen miles.

Wedneſday, the twentieth, the wind turned to the S. W. by W., ſo that I could not ſeas in with our north courſe, but was forced to ſtretch it away to the ſouthward.

Thurſday, the twenty-firſt, the wind returned to the N. N. E., and to the N. E. At four in the afternoon we had the ſight of *Fulneſs* to the S. and by E. off us: and no ſmall ſurpriſe was it to us to ſee all the land covered with ſnow at this time of the year. A proſpect of one's own country had been agreeable no doubt to any of us after ſo long an abſence by conſtraint and misfortune, but much more had ſhe had the uſual garb of the ſeaſon. Soon after the wind came to the E., and obliged me to tack to the norward in the night; we had much ſnow, and a freſh gale ſhifting N. E. and by N., and E. N. E.

Friday, the twenty-ſecond, in the morning, with a N. N. E. wind, I came into Yarmouth-road, and, thanks be to God, gave my owners a ſight of their ſhip; one of them, as I was told, but three hours before, having proffered his part for three guineas, which was now worth one hundred and fifty pounds.

The wind holding in the ſame point, and a fair tide with me, I made no ſtop, but put through the road, and ran that night into *Aldborough* bay, where the wind coming weſterly brought me to an anchor; ſo I rid all night.

Saturday, the twenty-third, by day-light, perceiving ſome colliers coming out of the *Neſſe*, I hoiſted out my long boat, and got ſome freſh proviſion among them, to our great comfort: that afternoon I got out *ſled* way, the wind ſtill at W.

Sunday, the twenty-fourth, the wind coming to the N. W., I got up to the buoy off the middle of *Lee*. It was calm and very warm, which brought our men into many complaints, as pain in their limbs, &c.; ſo that the next day I thought fit to ſend two of them up the river. I took notice of one of our company that went well to his cabin, but when we called him out to heave up the anchor, he was ſo ſwollen that we feared he would burſt: but then being got above Graveſend, I hired a wherry and ſent him up with three more; ſupplying their places with ſome freſh and able men to bring up the ſhip.

I and all the reſt perceived ourſelves manifeſtly the worſe for the warm weather, as we called it; but 'tis well enough known almoſt to every one living, that ſuch a temper of air in England, both then and for ſome time after, was ſcarce ever obſerved when the year was ſo far advanced.

A NEW ACCOUNT OF SAMOIEDIA, AND THE SAMOIEDES.

From the *Hiſt. Gen. des Voyages*, XXIV. 66.

THE account which we now publiſh, ſays the author *, deſerves to be diſtinguiſhed from the maſs of writings which ſo frequently appear, for the novelty, the ſingularity, and truth which are united in it.

The perſon to whom we are indebted for it, is very well acquainted, although a ſtranger, with the vaſt empire of Ruſſia. He is a man of ſenſe, for a long time employed in that country; formerly in military, and at preſent in civil, affairs.

To much acquired knowledge he joins all the qualities which conſtitute a good obſerver; an ardent curioſity after all the productions of nature, much attention, and great ſagacity. The reading of his memoirs will be ſufficient for the conviction of ſuch an eulogium not being exceſſive, but a ſtill greater number of proofs may be found, in the Supplement which the ſame writer has compoſed for the *Dictionnaire de Savary*, relative to the articles concerning Ruſſia; if, as it is to be wiſhed, he determine on preſenting them to the public. The truth and preciſion which characterize all the works from his pen, give them an inconteſtible ſuperiority over every thing which has yet appeared on the ſame ſubject.

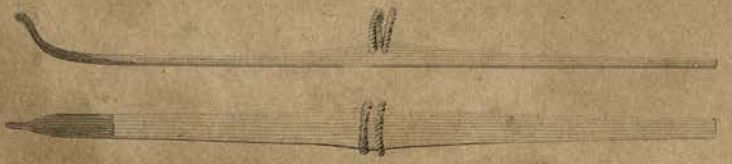
This collection of obſervations formed a part of the Memoirs ſent to M. de Voltaire, for his *Hiſtoire de l'Empire de la Ruſſie ſous Pierre le Grand;* but that illuſtrious author made only a ſuperficial uſe of it, any more than of the documents which his Excellency the Chamberlain Iwan Iwanowitch de Schuwatow had furniſhed him with by direction of his court; this is at leaſt what Dr. Buſching, ſo well known by the important ſervices he has rendered to geography, reproaches him with, in the preface to his German tranſlation of the Hiſtory of Peter the Great by Mr. Voltaire.

The merit of this Memoir would induce us willingly to give it purely and ſimply as publiſhed; but we have thought, on one ſide, it were our duty to add ſome obſervations to it not foreign to the ſubject, and, on the other, to retrench what relates to the Laplanders, to make uſe of hereafter when we ſhall treat of thoſe people, in an extract from an excellent hiſtory publiſhed in German ſome years ago by Profeſſor Hoegſtroeng.

Among the number of hiſtories of voyages, with which the public have been deluged, few are to be found in which the characters and manners of the ſeveral barbarous nations diſperſed over the different parts of the globe, have been laid down in a ſatisfactory manner; and where thoſe which we poſſeſs have been ſufficiently explicit in reſpect to any nation of barbarians, they agree ſo ill the one with the other on facts, that the reader who is anxious for inſtruction, after peruſal of them, can only doubt, and keep his judgment ſuſpended.

Some repreſent theſe people as a ſpecies of animals of human ſhape, to whom they concede a favour in allowing them to reſemble man in figure: and they are ſpared, when the poſſeſſion of that good ſenſe natural to mankind is not diſputed, on account of a difference exiſting between their manners and our own; from the habitude of obſerving foreigners only through the veil of thoſe prejudices which men have in general in favour of their own nation and their own particular cuſtoms.

Other relations again preſent theſe ſavages as differing from us in too ſlight a degree, and diſguiſed only by a maſk ſomewhat whimſical and novel to us. From a ſingular

* *Memoire ſur les Samoiedes.* Konigſberg in Pruſſia, 1762.

Samoieds.

London: Published by Longman, Hurst, Rees & Orme, Paternoster Row 1808.

attachment to that favourite and commonly received principle, that men are every where the ſame; the ideas, the virtues, and the vices which are met with in poliſhed ſociety, and which, like ſpeech, are conceived inherent in the human ſpecies, are granted them. Obſervers of too ſhort ſight to diſtinguiſh the diſtance between man in an uncultivated and ſavage ſtate, bordering on the primitive condition of nature, and man in a civilized ſtate, who diverges from the former in proportion to the civilization and cultivation which he has experienced: they confound together two various beings, and exhibit to us at the extremity of the globe, in midſt of the moſt horrid deſerts, the image of themſelves a prey to all the paſſions by which they are conſumed.

It would nevertheleſs be very important for the natural hiſtory of man, to have ſome more preciſe information reſpecting all thoſe individuals, who as yet retain ſome original features of man iſſuing from the hands of nature; by examination it would afford us the means of aſcertaining what has been gained or loſt by ſociety and education. But how can we expect to obtain ſuch intelligence, while all we know of theſe people is derived from the accounts of navigators and merchants, occupied by views of a different nature, or by their intereſt alone?

That which remains then as the beſt we can do to ſupply this defalcation, is to fathom, as often as occaſion may offer, the truth of the narratives we meet with reſpecting diſtant nations, to rectify the errors they may contain, and by ſuch means to enable the learned to form juſt and well grounded ideas, ſo as at leaſt to ſpare them the unpleaſantneſs of ſeeing their ſyſtem melt away, from its being founded on chimerical and falſe circumſtances, taken from narratives little to be depended on, or totally untrue.

What has been generally obſerved of the imperfect knowledge we poſſeſs of the greater part of the barbarous nations, is found to be fully true in reſpect of the Samoiedes and the Laplanders, ſubjects of the empire of Ruſſia.

Scarcely a century has paſt ſince the name of a Samoiede was unknown in Europe. Since then Olearius, Yſbrand Ydes, the celebrated Witzen, and Cornelius de Bruyn, have applied themſelves to the ſtudy of the manners and genius of theſe people; and they have given to the public the reſult of their inquiries; but their accounts are very defective and erroneous, and their errors confirmed by obſervations on the Samoiedes, publiſhed at Peterſburg in 1732, have become eſtabliſhed for want of better information. It is not then aſtoniſhing, that every thing which has ſucceſſively appeared on the ſame ſubject ſhould as well be ſtamped with the ſeal of ignorance and falſehood, ſince it has been merely the copy of what has appeared from travellers themſelves but badly informed.

It falling to my lot to reſide for ſometime at Archangel in the neighbourhood of the Samoiedes, I conſidered that a part of my leiſure could not be better employed than in a cloſe examination into their cuſtoms and manners. After having peruſed whatever has been publiſhed on this ſubject, I have made an abridged collection of the circumſtances which I met with that were intereſting, taking care to ſeparate the true from the falſe, and adding the particular ideas which I formed of the character and nature of theſe barbarous nations, after contemplating them with an impartial and attentive eye.

Without aſſumption to the title of a ſkilful obſerver, I ſhall congratulate myſelf upon having accompliſhed my deſign, if I ſhould ſucceed in undeceiving the public for once upon the uncertainty and falſehood of what has heretofore been related; and ſhall meet with a moſt flattering reward in the ſatisfaction I ſhall experience, at having contributed what was in my power to the developing of ſome hiſtorical truths.

When I ſpeak of the town of Archangel, as of a place in the neighbourhood of theſe people, I do not pretend to give credit to what is recounted in the greater part of the relations of voyages in Ruſſia; that is to ſay, that the firſt eſtabliſhments of the Samoide colonies are met with in the neighbourhood of that town. It is certain that they are not met with nearer to it than three or four hundred werſts. When at times Samoiedes have been met with at Archangel it has been in winter, and their object in coming has been no other than to bring, by means of their rein-deer, fiſh-oil and other articles of trade, on account of certain merchants or country people, who carefully entertain both them and their rein-deer.

The origin of this error has been in the circumſtance of there having been formerly, and even ſo late as the beginning of the preſent century, ſome families of Samoeides hired by the inhabitants of Archangel, which according to the cuſtom of theſe people encamped in the environs of this town, for finding paſture for their deer. Some travellers having ſeen them on this ſpot, and particularly Cornelius le Bruyn, who on this matter has written at large, they have poſitively aſſured that Samoiedia, and the eſtabliſhmen s of the Samoiedes began in the neighbourhood of Archangel. But for thirty years back and more, there has been no family of Samoiedes eſtabliſhed in that quarter; it is further a certain fact, that this people have never inhabited the coaſts of the White Sea, nor ever have been employed by the Ruſſians in the fiſhery for ſea dogs, ſea calves, and other animals from which oil is extracted, as has been told.

The real ſpot where the habitations of the Samoiedes begin, if any caſe be pointed out among a people which is continually changing reſidence, is in the diſtrict of Mozine, beyond the river of that name, three or four hundred werſts from Archangel.

The colony which is actnally met with there, and which lives diſperſed according to the uſage of thoſe people, each family by itſelf without forming villages or communities, does not conſiſt of more than three hundred families or thereabouts; which are all deſcended from two different tribes, the one called Laghe and the other Wanoute: diſtinctions carefully regarded by them.

This colony is called Objendiu; another contiguous to it nearer to Petzora, is named Tihijondire; that is near to Pouſtozer, oppoſite to Weigats Straits commonly entitled Gougorſkoi, is known among themſelves by the name of Guaritzi.

This ſavage nation occupies the extent of more than thirty degrees along the coaſts of the North Sea, and the frozen ocean, between ſixty-ſix and ſeventy degrees of northern latitude, reckoning from the river Mozine towards the eaſt, beyond the Oby, as far as Jeneſii, and perhaps farther as we are yet unacquainted with the limits of their habitations.

All theſe Samoiedes diſperſed through deſerts of ſuch vaſt extent, have indiſputably a common origin, which is evidently ſhewn from the reſemblance of their phyſiognomy, their manners, their mode of living, and even their language; although divided into different families or tribes, more or leſs diſtant from the Ruſſian dwellings.

I am far from adopting the ſentiment of thoſe who imagine the Laplanders and Samoiedes to be deſcended from one and the ſame nation: M. de Buffon, who ſtands juſtly eminent in the republic of letters, is evidently miſtaken when he affirms in ſo poſitive a manner in his *Hiſtoire Naturelle*, that the Laplanders, the Zemblians, the Borandians, the Samoiedes, and all the Tartars of the North, are people deſcending from the ſame race. It muſt however be obſerved by the way that when he ſpeaks of Zemblians, he ſpeaks of an imaginary people, ſince it is a certain fact that Nova Zembla or Zemla, which ſignifies in the Ruſſian language New Land, is not inhabited. In what he ſtates reſpecting the Borandians he is equally wrong, that name is not even

known throughout the North, and indeed, from the deſcription he gives of them, they could be recognized but with great difficulty. He even advances a bold aſſertion, when he ſtates the Laplanders, the Samoiedes, and the people of Northern Tartary to form but one nation; ſince it requires no more than an attention to the difference of their features, their manners, and their language to be convinced they are of a different race as will in the ſequel be ſhewn.

Let me be permitted to make a ſhort digreſſion on the ſubject of Nova Zemla, of which I have mentioned, ſome intereſting particulars will be found in it, which I have received from well informed perſons, and which will throw ſome light on what may have made it be preſumed to be inhabited.

As the Ruſſians inhabiting Mozine and the neighbourhood of Archangel, have for many years been accuſtomed to fiſh for wabraſes or ſea calves, on the coaſts of Nova Zemla; and have even paſſed the winter there; all the ſhores are well known to them. From the uniform account of all thoſe who have landed on the iſland, it is eſtabliſhed that the Strait of Weigats ſeparates it from the continent; that it begins in latitude 71°, and extends in a direct line towards the North, as far as latitude 75° 4′ N., and that on the other hand it comprizes 7° from Weſt to Eaſt. Preciſely in the middle of this iſland or to ſpeak with more exactitude under the 73° of latitude on the eaſtern ſide; a channel or ſtrait is met with which traverſing the whole iſland, and turning towards the N. W., falls into the North Sea, on the weſtern ſide, in latitude 73° 3′, cutting the iſland nearly into two equal parts.

It is not known whether this ſtrait be navigable; it has certainly been always found covered with ice, and on this account it could never be well examined.

The courſe from Archangel, or the coaſt of Mozine to Nova Zemla, is not attended with much riſque by paſſing by Kandanvoes and the iſland of Kalgnew. Little informed as the perſons who undertake this voyage are in the art of navigation, they know enough not to miſs the bays, which are upon the coaſts of this country; and which already they are well acquainted with. There is as well always to be met with a ſufficient number of people ready to undertake this fiſhery; notwithſtanding the profit that is derived from it be very moderate.

Theſe voyages are made in ſmall veſſels built in the old faſhion of their country; the complement of which uſually conſiſts of ten or twelve men, who receive no other pay than the portions of the produce of the fiſhery, which are allotted them, after deducting the expences of the equipment, and the major part reſerved for the proprietor of the ſhip.

This country at leaſt as much of it as is preſent known, is a deſart entirely barren. It produces very little herbage; neither trees nor buſhes are to be met with, ſo that thoſe who reſort there for the fiſhery, are obliged to provide themſelves with wood for firing.

It is true of all thoſe who have landed in the iſland, none have penetrated further than fifty or ſixty werſts into the interior, which may give room for conceiving that in the center of the iſland there may poſſibly be ſome lands more fertile, and even ſome inhabitants. However, as the ſhores have been frequented for a long time all round the iſland, by a number of people attracted there by the fiſhery, without the leaſt veſtige of inhabitants being diſcovered; and beſides, as no other animals have been met with but ſuch as feed on moſs or fiſh, ſuch as white bears, white foxes, and rein-deer; and not even one of the deſcription which are ſupported by berries, herbage, roots, or ſhoots of ſhrubs; it is highly probable that this iſland contains no inhabitants, and that its interior is as deſtitute of wood as the ſhores.

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As well, there is great probability that thoſe who have been taken for natural inhabitants of the country, were the crews of ſome Ruſſian veſſels; the more ſo, from its being cuſtomary for the fiſhermen on theſe voyages, to dreſs themſelves in the manner of the Samoiedes. Nevertheleſs, the cold here is not ſo intenſe as might be imagined. Navigators who have wintered ſeveral times in Nova Zemla, and in Spitzbergen, have aſſured me that the cold of Nova Zemla is very tolerable in compariſon to that of Spitzbergen; which as well is nearer to the pole by ſeveral degrees.

In this laſt iſland during the winter their is no twilight. It is only by the poſition of the ſtars which are continually viſible that the day is diſtinguiſhable from the night; whereas in Nova Zemla the day is always marked by a feeble light which appears about noon; even when the ſun is not viſible.

The perſon who related to me theſe particulars eight or nine years ago, loſt twenty-four men, of the crews of ſome veſſels which he had ſent to Nova Zemla to paſs the winter; they were all found dead on the ſpot where they had eſtabliſhed themſelves. This misfortune frequently befalls thoſe who remain there too late in the ſeaſon; but we muſt not be too hazardous in aſcribing it to the cold. Their death is to be attributed to the thick and noxious fogs, occaſioned generally by the putrefaction of the weeds and moſs on the ſea ſhore. When the froſt is late in making its appearance, theſe peſtilential vapours poiſon and ſuffocate thoſe who breathe them. What confirms this fact is the circumſtance of a colony from Miſine, being there at the ſame time compoſed of twenty men, who had conſtructed their huts a hundred werſts from that of the others; none of which died. They all returned the ſucceeding years in perfect health, but declared that they had ſuffered gteatly from the fogs, and had all of them been ill.

The foul ſmell of theſe fogs, according to the report of thoſe who have frequented Nova Zemla is ſo diſguſting, ſo inſupportable, as cannot be deſcribed. Their effect is the more dangerous when they happen at the time of a thaw, with the ſea wind blowing towards the dwellings where the fiſhermen winter.

From ancient tradition it is known, that under the reign of the Czar Jwan Waſilowitz at the time of the deſtruction of Nowogerod; ſome Ruſſian families took refuge and eſtabliſhed themſelves in Nova Zemla. A countryman who had withdrawn himſelf from the domination of Strogaroff, as well retired there with his wife and children. Many Ruſſians know as yet the places inhabited by theſe fugitives, and deſignate them by their names; but the deſcendants of theſe unfortunate men periſhed altogether, in all probability from theſe putiferous effluvia.

A mine of ſilver, ſtated to have been found in Nova Zemla, and the ſpot on that account was called Serebronka, a name bears to this day. The perſon who related to me the circumſtance relative to the mine, and ſeveral others, informed me, at the ſame time, that he had not been able to aſcertain if theſe traditions were to be relied on; although careful of ſeeking the truth in all his reſearches of this nature.

The exiſtence of this mine of ſilver, ſuppoſing it to be true, would have nothing extraordinary in it; ſince it is conſidered a fact in Ruſſia, that under the reign of the Empreſs Ann, in a little deſert iſland of the White Sea, ſome rocks were found encruſted almoſt entirely with ſilver ore, of the richeſt quality that ever was ſeen, as was acknowledged at Peterſburg; to which place large bars of it were ſent. Conſiderable riches were expected from this fortunate diſcovery; but on piercing the rock, they perceived that the interior did not contain the leaſt trace of the ore; and that it was ſimply an incruſtation, poſſibly as ancient as the globe; or which may be refered the deluge, that reſolves ſo many problems.

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To return to the Samoiedes, from whom we have ſomewhat wandered. Theſe men are of lower ſtature than the middle ſize: I never ſaw any that were leſs than four feet high, although that be the greateſt height aſcribed to them in general, as a ſucceſſion of the fable of the pygmies, of which ſome will have that they eſtabliſh the reality. Some of them were above the middle ſize, nay even more than ſix feet high. They are ſturdy and nervous, broad and ſquare built, with ſhort legs, and ſmall feet; the neck very ſhort, and the head large in proportion to the body, a flat face, black and tolerably open eyes; the noſe ſo much flattened, that the end is nearly upon the level with the bone of the upper jaw, which is very ſtrong, and greatly elevated, a large mouth, and thin lips. Their hair, which is as black as jet, but extremely hard and ſtrong, hangs from their ſhoulders, and is very ſleek: their complexion is of a yellow brown, their ears large and elevated.

The men have little or no beard, and their head, as well as that of the women, is the only part of the body which produces hair. There remains to examine if it be a natural defect, a particular quality incident to their race, or only the effect of a prejudice, inducing them to attach an idea of deformity to the hair of the body, which may cauſe them to root it out whenever it may make its appearance. However it may be, it becomes the intereſt of the women, above all, not to ſuffer hair to grow on their body, ſhould it be natural to them, ſince according to the uſage of their people a huſband has a right to return the girl to her parents whom he might have taken to wife, and cauſe whatever he had purchaſed her for to be returned him, provided any hair were found about her, except upon her head. A ſimilar caſe, it is true, muſt be very rare, even allowing them to be ſubject to this natural vegetation, which they apparently conſider as a great imperfection, ſeeing that a man marries generally a girl when but ten years of age. As well it is common among theſe people to ſee mothers of children no more than eleven or twelve years old; but, in equivalent, theſe forward mothers ceaſe to bear children after thirty years of age. May not this practice of marrying their girls before the cuſtomary period of maturity, as well as the licence which the men poſſeſs of buying as many wives as they can pay for, be the phyſical cauſe of the little fecundity of the Samoiedes, and probably of their diminutiveneſs?

The phyſiognomy of the women exactly reſembles that of the men, excepting that their features are rather more delicate, with their body more ſlender, the leg ſhorter, and the foot ſtill leſs; otherwiſe it is difficult to diſtinguiſh the ſexes by the exterior, or by their dreſs, which is very nearly the ſame.

Both men and women, as among all the barbarous nations of the northern countries, wear dreſſes made of rein-deer's ſkins, with the hair outermoſt, and ſewed together, which makes them a cloathing all of one piece, and fits and covers their body extremely well. This dreſs is ſo well calculated for their occaſions in the rude climate which they inhabit, that the Ruſſians, and other nations who are under neceſſity of travelling in their country, wear the ſame habiliments. The only diſtinction obſervable in the cloathing of the women conſiſts in ſome ſcraps of cloth, of different colours, with which their ſkins are trimmed; and the youngeſt among them ſometimes take the pains of ſeparating their hair in two or three treſſes, which hang down behind.

Thoſe who have pretended that the Samoiede women were not ſubject to periodical evacuations are miſtaken: this is a circumſtance on which I received very exact information; but it is true their purgations of this nature are very ſlight.

Another phyſical peculiarity of the Samoiede women, which appeared to me very curious, and of which my inquiries on the ſubject as completely ſatisfied me of the truth,

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is their having all of them their teats flat, ſmall, and ſoft at all times, even when virgins, with the end of them as black as coal. It might be conceived that this accidenet were the reſult of their premature marriages, if it were not certain that this attribute is common to the Laplanders; notwithſtanding the latter never marry earlier than at fifteen years. Some other reaſon therefore muſt be ſought, either in the natural conſtitution, or the food of theſe people.

Their tents, compoſed of pieces of the bark of trees ſewed together, and covered with rein-deer ſkins, are conſtructed in a pyramidal ſhape, on poles of a moderate thickneſs. An opening is contrived at the top of this tent for the purpoſe of leaving a paſſage for the ſmoke, which when cloſed increaſes the warmth. From this it is plain that the tales of their ſubterranean dwellings are fabulous. As the folding up of theſe tents is to them an eaſy matter, they tranſport them from place to place by means of their rein-deer: this manner of conſtructing an habitation is incontrovertibly the moſt ſuitable to the wandering life which they are obliged to follow; for the ground producing abſolutely nothing fit for their ſuſtenance, they are obliged to change their abode frequently in ſearch of the wood they have occaſion for, and to find moſs for their rein-deer.

This as well is one of the reaſons which, joined to their intereſt in hunting, reſtrains them from remaining together in any great number; for ſeldom will more than two or three tents be found in the ſame neighbourhood, and as their deſerts are of an immenſe extent, they can change their reſidence as frequently as their neceſſities require, without injuring one another.

In ſummer they prefer the neighbourhood of rivers, to profit from the fiſhery with more facility; but they always keep at a great diſtance from each other, without ever forming a ſociety.

After providing food, which is a care the men are charged with in every family, while the women are employed in ſewing cloaths together, keeping the fire, and looking after the children, there is nothing farther that they feel intereſt in; they vegetate in tranquillity, amuſing themſelves after their manner, ſtretched on rein-deers' ſkins ſpread round the fire in their tent. The ſweets of idleneſs ſupply the place of the paſſions among theſe people, and neceſſity alone has power to rouſe them to activity. This love of idleneſs is one of the principal features by which the uninformed man, left to nature alone, is recognized.

Hunting in winter, and in ſummer fiſhing, furniſh them plenteouſly with food. They are equally ſkilled in both theſe exerciſes; and as the rein-deer forms all their wealth, they endeavour to take and keep as many of them as they can. Theſe animals are the better ſuited to the natural lazineſs of theſe people, from their requiring no care for their fodder, which they find themſelves in moſs under the ſnow. Further, whatever animal they meet with in hunting they deem proper for food, not diſdaining even the carcaſes of ſuch as they find dead. However revolting this taſte of the Samoiedes may appear to us, in this matter they are not much behindhand with the Chineſe, who, civilized as they are, it is well known feed on carrion.

The Samoiedes however refrain from eating dogs, cats, ermines, and the ſquirrel, without my being able to learn the cauſe of their exceptions. As for the fleſh of the rein-deer, they eat it always raw: it is with them a luxury to drink the blood of theſe animals quite warm: they even pretend that this drink ſerves as a preſervative againſt the ſcurvy; but they are unacquainted with the practice of milking them, as many writers have affirmed without foundation.

They eat their fiſh alſo quite raw, of whatever deſcription it may be, but other kinds of food they prefer cooking; and as they have no fixed hours for their meals, they have always

always a boiler containing meat on the fire, which they keep in the middle of their tents, in order that any of them who compoſe the family may eat whenever he pleaſes.

With reſpect to the name of Samoiede, there is ſome diſpute on its etymology. Some imagine the name ſynonymous with anthropophage, anciently given to theſe people, on account of their having been ſeen to eat raw fleſh, which was taken for human; whence it was inferred that they devoured the dead bodies of their neighbours, as well as of their enemies, after the faſhion of the cannibals. But they have been freed from any ſuch conception with reſpect to them for ſome time; it is even known from the traditions of theſe people, that no ſuch barbarous cuſtom ever exiſted among them.

Others pretend the word Samoye ſignifies, in the language of theſe people, *an inhabitant of the country*, and that their denomination is deduced therefrom. This origin would appear ſufficiently natural, if the ſuppoſition which is the baſe of it was not deſtitute of proof. But as in their language there is no word to be found reſembling Samoye; and as in their dialect they give themſelves the names of Minez and Chaſowo, it is clear this latter etymology is purely chimerical, like many other derivations adopted without diſcuſſion.

It will therefore be proper to ſeek for a word in the language of the neighbouring nations which may have affinity thereto. Now as it is well known that the Fins formerly inhabited the greater part of the countries of the north; the word *Sooma*, which ſignifies in the Finniſh language a marſh, may very well have ſerved as an origin for the name Samoiede: it is alſo very likely the root of the name *Samalantſch*, which the Laplanders give themſelves in their own tongue, and that of *Somaemayes*, which the Carelians call themſelves by.

In the Ruſſian chancellary the Samoiedes are deſignated by the title of *Sirogneſzi*, eaters of raw meat. This is all I have been able to obtain of leaſt uncertain reſpecting theſe people.

As to what regards the period of the Samoiedes paſſing under the Ruſſian dominion, almoſt all hiſtorians agree in fixing the period in the reign of the Czar Feodor Iwanowitz. It is in this reign that the relations made by a perſon of the name of Onecko, who carried on a very lucrative trade in this country, as it is ſaid, gave birth to the deſign of ſubjugating it. It is added, the conqueſt of the country was not completed until under the reign of his ſucceſſor, the Czar Boris, and that it was effected by the building of forts, and even ſome towns. However I am induced to think there is ſome error in this; for I have ſeen the ordonnances publiſhed in the firſt years of the Emperor Peter I., concerning the means to be taken for collecting the tribute of the Samoiedes, where mention is expreſsly made of letters patent having been granted to theſe people more than ſixty years before the reign of the Czar Feodor Iwanowitz; and by which permiſſion was granted them to collect of themſelves the tribute in peltry which they had to pay. Add to which, it is certain it never was in contemplation even to build any town or fort among the Samoiedes, for the purpoſe of ſubjugating them; and actually there is none in exiſtence throughout their country. Their tribute, called *jeſſak*, is received in ſmall towns ſituated in the vicinity of their country, inhabited by Ruſſian coloniſts: it conſiſts in a ſkin of the value of twenty-five copecs annually for every man who can draw the bow; and every ſpecies of peltry is valued at a certain rate. But as we are now ſpeaking of a fact, in contradiction to the ſtatement of all who have written on the ſubject; and as the curious may ſee with pleaſure an original compoſition, in the ſtile of that time, I have thought it right to tranſlate one of the ordonnances of which I have ſpoken: the original is preſerved in the archives of the chancellary of Puſtoſer.

" On the part of the czars and grand princes, John Alexiowitz and Peter Alexiowitz, " ſovereigns of all the Ruſſias, the great, the leſs, and the white, to our ſtolnik and " governor of Puſtoſer, John Matweowitz Kaſtire. A requeſt has been preſented to " our high lordſhips from the *Samoiedes Gongorſki* and *Petcherſki*, in which theſe people " inform us that they are in poſſeſſion of letters patent, granted to them by our anceſtors " at a diſtant period, when theſe people in 7033 (which correſponds to the year 1525 " of the common era) requeſted to be taken under the dominion of that great lordly " czar and grand prince, Waſili Iwanowitz, ſovereign of all the Ruſſias, of happy me- " mory; in which it was ordained that they were to be received by our powerful hand " in quality of ſubjects, and be protected from any foreign inſult, in conſideration of " their paying their tribute in peltry at Petchora and Puſtoſer. In courſe of time, " namely, in 7105 (1597), our great-grandfather, the great lordly czar and grand " prince, Feodor Iwanowitz, ſovereign of all the Ruſſias, of happy memory, granted to " them that they ſhould pay their tribute only in conformity to the ancient regiſters at " Puſtoſer, and that they ſhould have allowance to collect this tribute among themſelves. " And whereas according to the complaints they make, theſe tributes are demanded of " them at *Bereſowa* and in *Meſen*, without giving them quittances for what is received, " and are made to pay this tribute again at Puſtoſer; they intreat that in conformity to " the letters patent in exiſtence, it be enjoined that they may be proceeded with in a " manner conformable to the preceding ordonnances; that they may have the permiſ- " ſion of collecting the tribute of ſkins among themſelves at one ſpot, namely, Puſtoſer, " and that it may be forbidden they ſhould be required to pay a ſecond time at Bereſowa " and Meſen, or that any violence be offered them, in order that they may not be obliged " to diſperſe and abandon the country, which would cauſe the ſovereign to loſe his " tribute. It has as well been repreſented to us that the Karatſcheſkoi Samoiedes, and " the families depending on them, in a petition ſigned with the marks common among " theſe people, every year deliver a great number of ſkins as their tribute to our receiver " at Bereſowa, and not knowing whether the ſaid tribute be forwarded entire to our " high lordſhips at Moſcow, they have given a ſpecification, ſigned with their uſual " marks, of the ſurplus which they annually pay to our receiver at *Puſtoſer*, the ſoldier " *Stainka Wolouquenin*. Now, in conſequence of theſe petitions we ordain that imme- " diately after receiving theſe preſent letters, thou mayeſt take meaſures for hindering " the ſaid *Samoiedes Gongorſki and Petſcherſki* from being any longer obliged to pay any " other tribute than that impoſed upon them by our anceſtors; and farther, that they " have the permiſſion of collecting this tribute by themſelves in conformity to their pe- " tition, according to the ancient regiſters; and that there be granted to them for re- " ceiver of the ſaid tribute, whichſoever of the people in our ſervice they may themſelves " ſelect; that thou take as well eſpecial care that the ſaid receivers of tribute offer no " violence to theſe *Samoiede* people, by requiring or extorting from them, for their indi- " vidual advantage, any thing beyond what is impoſed on them; and that the whole " being collected together be carried to *Puſtoſer*, as before. And after theſe people " ſhall become accuſtomed to pay their tribute at Puſtoſer, thou ſhalt ſend to us the " ſaid tribute regularly every year, without ſuffering any deduction, and this by the " ceiver, accompanied by any Samoiede which they may chooſe for this purpoſe, and cauſe " him to be brought directly before our high lordſhips at Moſcow, in the chancellary or " pricaſie of Novogorod. Let no tribute be a ſecond time required of theſe Samoiedes, " Gongorſki and Petſcherſki, at Bereſowa, or in Meſen; let them be protected from " all foreign inſult, and have particular care that no violence be done them. And after

" having read theſe preſent letters and taken a copy thereof with thine own hand, thou " haſt to deliver the original of theſe letters patent to theſe Samoiedes, [in order that " they may be of ſervice to them with reſpect to the other waywodes or officers who " may ſucceed thee in the employ wherewith thou art inveſted." Given at Moſcow, in the Year 7192, (1684) the 9th of July. The original is ſigned by the hand of the * Diack *Procophei Woſnizin*, and collated by the ſub-diack *Alexei Ferſanow*.

In regard to † Puſtoſer, of which in this ordonnance mention is made, it muſt be obſerved, that in conformity to information extracted from the archives of the chancellary of that town; the nation, the deſcendants of which inhabit that country at preſent, before it embraced Chriſtianity, (two or three hundred years ago, according to the tradition of the country,) bore the name of Tſhudi, which in the Ruſſian language ſignifies Fins.

The Samoiedes who lived in the marſhes or neighbouring deſerts, giving ſome inquietude to the Ruſſian colonies, they built the ſmall town of Puſtoſer, for the purpoſe of placing themſelves in a ſtate of defence againſt ſtrangers who might land from the ſea on that ſide, according to their old traditions. For the ſame purpoſe in 7156 (that is to ſay 1648,) 50 ſoldiers were eſtabliſhed there with their wives and children, ſent from Cholmoger in the neighbourhood of Archangel. At preſent there is always a company of ſoldiers there from the garriſon of Archangel itſelf. And in ſpite of the barrenneſs of the country, and the ſmall number and wretchedneſs of the inhabitants, the induſtry of theſe people renders the poſt of waywode of the Puſtoſer a very lucrative appointment for the officers inveſted therewith.

Puſtoſer, the only place in the country of the Samoiedes to which the name of a town is given, although properly ſpeaking it to be no more than a village, is ſituated a hundred werſts or thereabouts from the frozen ocean, a ſhort diſtance from the ſtraits of Weigatz. The air in this quarter is ſo cold, and the ground ſo poor, that it produces no ſort of grain, or fruit; but the lake whence it takes its name abounds in fiſh. This is the ſum of what is remarkable in this country, unknown to the reſt of the earth.

The religion of the Samoiedes is very ſimple. Thoſe who pretend that the light of human reaſon is ſufficient of itſelf to form a ſyſtem of religion, are obliged to allow, that a ſimiliar ſyſtem, conceived and arranged by men in a pure ſtate of nature, ſuch as that of the Samoiedes, could be no other than very obſcure, and very imperfect. Accordingly their belief is reducible to the ſmall number of following articles.

They admit the exiſtence of a ſupreme Being, Creator of all things, eminently good and beneficent: a quality which according to their mode of thinking, diſpenſes them from any adoration of him, or addreſſing their prayers to him, becauſe they ſuppoſe this Being takes no intereſt in mundane affairs, and conſequently does not exact nor need the worſhip of men. They join to this idea, that of a Being eternal and inviſible, very powerful, although ſubordinate to the firſt, and diſpoſed to evil; it is to this Being that they aſcribe all the misfortunes which befall them in this life. Nevertheleſs, they do not worſhip, although much in fear of him. If they place any reliance in the counſels of *Koedeſnicks* or *Tadebes*, it is only on account of the connection which they eſteem theſe people to have with this evil Being, otherwiſe, they ſubmit themſelves with perfect apathy to all the misfortunes which can befall them, for want of knowing the means of avoiding them.

* Dignity which according to the uſage of that time, anſwered to that of Chancellor or Secretary of State.

† Puſtoſer is derived from the Ruſſian word *Puſto* a deſert, and *Oſero* a lake.

The ſun and moon as well hold the place of ſubaltern Deities; it is by their intervention they imagine that the Supreme Being diſpenſes his favors; but they worſhip them as little as the idols or fitches, which they carry about them according to the recommendation of their Koedeſnicks. They appear to care very little about theſe idols, and if they wear them, it is only owing to the attachment which they appear to have to the traditions of their anceſtors, of which the Koediſnicks are the depoſitaries and the interpreters.

Among them ſome ideas of the immortality of the ſoul prevail, and a ſtate of retribution in another life; but all this refers ſimply to a ſpecies of metempſycoſis. This ſentiment obſcure as it is, ſeems to indicate that theſe people deſcend from ſome Aſiatic nation, formerly inhabiting the vicinity of India.

It is in conſequence of their opinion of the tranſmigration of ſouls, that they are accuſtomed to inter with him, the dreſſes of the deceaſed, his bow, his arrows, and whatever belongs to him, becauſe they ſay the defunct may need them in another world, conſidering it unjuſt for any individual to appropriate to himſelf what belongs to another. By this it is viſible, that if the doctrine of the immortality of the ſoul form a part of their religion, it is only as a ſimple probability, reſpecting which they have their doubts.

Laſtly among them none of thoſe religious ceremonies in uſe among other nations, in particular circumſtances of life, are met with. Their Koediſnicks are not to be conſidered in this light, any more than the ceremony of their marriage, the birth of their children, or burial of their dead: the whole adminiſtration of this kind of prieſts, is limited to their giving them advice, and idols of their making, when they are more than commonly unfortunate in hunting, or any ſickneſs occurs. It would be very difficult to introduce chriſtianity among theſe people, on account of their underſtanding being too much confined to enable them to conceive things beyond the evidence of their ſenſes; as well as that they deem their condition too happy, to be deſirous of any change.

The Samoiedes are as ſimple in their morals as in their dogmas. Unacquainted with any law, they are without terms even for * vice or virtue. If they abſtain from wrong it is by a ſimple inſtinct of nature†. It is true they are accuſtomed to preſerve their wives each to themſelves, and carefully to avoid all degrees of conſanguinity in marrying to ſuch a degree, that a man never marries a girl deſcended from the ſame family with himſelf, however diſtant the affinity. Although the contrary be advanced by ſeveral writers the fact may be relied on. They provide for their children till ſuch time as they arrive at the period of being able to help themſelves.

All theſe cuſtoms religiouſly obſerved among them, are no other than the fruits of tradition handed down to them by their anceſtors, and this tradition with ſome reaſon may be looked upon as law. But it does not appear that they are forbidden to aſſaſſinate, to ſteal, or to take poſſeſſion by means of violence of the wives, or daughters belonging to others. Notwithſtanding, if credit be given to theſe good people, who ſeem too ſimple to diſguiſe any thing, few indeed are the examples of ſuch crimes committed among them. When the cauſe of ſuch forbearance is required of them, as from their own confeſſion, they know of no principle which ſhould deter them from ſuch actions; they reply with ſimplicity: It is very eaſy for every one to ſupply his

* All the nations of the earth without exception, have very poſſibly been the ſame, it is thus Juſtin repreſents the Scythians. Book II. Chap. ii. "The ignorance of vice effected more with theſe people than the knowledge of virtue among others."

† Juſtice not law was reſpected by the people, Ibid.

wants, and it is not right to take what belongs to another. As for murder, they have no conception how a man can be induced to kill his fellow-creature. With reſpect to women, they imagine that the one which they are enabled to purchaſe for a trifle, may ſatisfy their appetite as well as another, more ſuitable to their fancy; but which might not be acquirable unleſs by violence.

From all that has been ſaid, it will be ſeen that they know no other wants than thoſe of ſimple nature; namely, food, the enjoyment of woman, and reſt.

As they are of a taſte no ways delicate, and eaſy of ſatisfaction, the perfect indifference which they contract in reſpect of their choice of women, ſtands inſtead of principle, and makes them act accordingly, without attending to it.

Their ſenſes and their faculties are in juſt relation to their being and mode of life. They have a piercing eye, very delicate hearing, and a ſteady hand; they ſhoot an arrow with the greateſt exactitude, and are exceeding ſwift in running. All theſe qualities, which are natural to them, and abſolutely neceſſary for ſupplying their neceſſities, have been perfected by continual exerciſe. They have, on the other hand, a groſs taſte, weak ſmell, and dull feeling; ariſing from the circumſtance of the objects about them not being of a quality to produce on their ſenſes any delicate impreſſion.

It is eaſy to conceive that ambition and intereſt, thoſe two great ſprings which put mankind in motion, and which in ſociety are the motives of all good and bad actions, as well as of the vices, which are the conſequences of them; ſuch as envy, diſſimulation, intrigues, injuries, meditated vengeance, ſlander, calumny, and falſehood, have no admiſſion in the moral ſyſtem of theſe people: on the contrary, their want of terms to expreſs theſe different vices, which cauſe ſuch ravages in civilized ſociety, ſufficiently ſhews their ignorance of them.

It will be comprehended without difficulty, that the manner of living of theſe people muſt be in conformity to the ſimplicity of their notions, and the ſterility of their country. Although many authors affirm, that the Samoiedes have princes, judges, or maſters, which they obey with great ſubmiſſion, it is certain, that they never knew of any ſuch, nor at preſent have any. They pay, without repugnance, the tribute impoſed on them in peltry, without knowing of any other ſubjection towards the ſovereign: they willingly ſubmit to this payment, becauſe they ſaw their fathers before them do ſo, and becauſe they know that if refuſed, it could be enforced.

In other reſpects, they are perfectly independent one of another; and if they pay any deference, it is ony to the ſenior of every family, and to the Koedeſnicks, whoſe counſels they ſometimes attend to, without obligation to ſubmit to them.

When it is ſaid that the rein-deer are the only riches of the Samoiedes, it muſt needs be conceived, that they are unacquainted with the uſe of money, and the difference in the price and value of metals, with the exception of ſome few in the neighbourhood of the Ruſſians, from whom they may have learnt this diſtinction. They make uſe of their rein-deer for the purchaſe of girls for wives; but, although upon agreeing with the fathers on the price of them, they may take as many wives as they will, they rarely take more than five, and the greater part content themſelves with two. There are ſome girls for whom a hundred, or a hundred and fifty rein-deer are given; but the purchaſer is allowed to return them to their parents and take back what was given for them, when diſſatisfied with them. As their wives are accuſtomed to produce children almoſt without any pain, they are ſuſpected of infidelity, and of having had commerce with ſome ſtranger when the contrary happens. It is on ſuch occaſions principally that they beat and ill treat them, to make them confeſs their fault: if the woman confeſſes, ſhe is ſent back to her parents, and her purchaſe price returned. Although the direct contrary be affirmed, even by

recent

recent authors, theſe facts are not the leſs certain. M. de Buffon declares as an authenticated matter, that not only are the huſbands not jealous, but that they offer their wives and daughters to the firſt comers. This ſkilful naturaliſt took information from very bad memoirs. The women of the Samoiedes have ſo much modeſty, that it is neceſſary to make uſe of artifice to induce them to expoſe any part of their body; although it be difficult to comprehend wherefore they ſhould attach an idea of ſhame to the diſcovery of any thing bare. Both ſexes are ignorant of the uſe of baths, and never waſh their body; they are conſequently very dirty, and of very diſagreeable ſavour.

This miſerable mode of life would doubtleſs horrify any perſon born and brought up in ſociety: notwithſtanding, theſe people are contiunally gay, exempt from grief, and well ſatisfied with their fate. I have known ſome Samoiedes who had ſeen the towns of Moſcow and Peterſburg, and who conſequently had been enabled to remark the advantages and convenience enjoyed by civilized people; but who appeared little moved thereby. They have conſtantly preferred their mode of living to all they ſaw more attractive and voluptuous among the Ruſſians; ſo much antipathy have they to ſervitude, dependence, and whatſoever tends to diſturb their quiet, or natural inclination for idleneſs.

They are fond of ſmoking tobacco, and drinking ſtrong liquors when they meet with them among ſtrangers; but they readily, and without the leaſt mark of regret, forego the uſe of them. This ſtupid inſenſibility is ſo natural to them, that no object however new to them, ſtrikes them any otherwiſe than ſlightly. It may excite their attention for an inſtant, but to a certainty cannot inflame their deſires.

I made an experiment on their apathy. I cauſed ſeveral Samoiedes of both ſexes to be aſſembled one day in a chamber, to examine them the more minutely. But although I left on the table money, fruit, ſtrong liquors, which I had previouſly let them taſte; and although I uſed every imaginable expedient to irritate their deſires; notwithſtanding I had ſent all my domeſtics away, and withdrew myſelf to a corner where I could ſee them without being perceived, they did not loſe their indifference; they kept quietly ſeated on the ground, with their legs acroſs, without touching any thing. Nothing but the looking-glaſſes cauſed any ſurpriſe in them for an inſtant; again a moment, and this ceaſed to draw their attention.

A SHORT

A SHORT JOURNAL OF SEVEN SEAMEN, WHO, BEING LEFT IN 1634 AT SPITZBERGEN TO PASS THE WINTER THERE, DIED THERE IN 1635.

[From CHURCHILL'S Collection. Vol. II. p. 359]

IN the year 1633, ſeven perſons being left much at the ſame time, as well at Spitzbergen as in the iſle of St. Maurice; the ſhips that were ſent thither in 1634 had orders from the Greenland company to releaſe thoſe that had ſtaid there, and to leave in their room ſeven others, who ſhould offer their ſervice for that purpoſe. Accordingly the following ſeven were (with their conſent) appointed to remain the next following winter at Spitzbergen: Andrew Johnſon of Middleburgh, Cornelius Thyſſe of Rotterdam, Jerome Carcoen of Delfts Haven, Tiebke Jellis of Friſeland, Nicholas Floriſon of Hoom, Adrian Johnſon of Delft, Fettje Otters of Friſeland.

Theſe being provided with all manner of neceſſaries, as meat, drink, phyſical preparations, herbs, &c. were left aſhore to continue all the winter there; during which time, they kept a journal of all remarkable circumſtances; the chief heads whereof I thought only fit to inſert here, leaving out the more unneceſſary obſervations, ſuch as of the wind and weather, &c. to avoid prolixity. The 11th of September 1634, the ſhips being ſailed thence for Holland, they got ſight of abundance of whales, at whom they diſcharged their guns, but could not take any; they went alſo in ſearch for green herbs, foxes and bears, but met with none. The 20th or 21ſt of October they had no more ſight of the ſun. The 24th of November, the ſcurvy beginning to appear among them, they ſearched very earneſtly after green herbs, bears and foxes, but to to their great grief could find neither of them; ſo they comforted one another with hopes that God would provide for them ſomething or other for their refreſhment. The 2d of December Nicholas Floriſon took a doſe of a ſcorbutic potion, and they ſet ſome traps to catch foxes. The 11th, Jerome Carcoen took ſuch another potion; and they reſolved for the future every one to eat ſeparately from the other, ſome being not ſo much afflicted with the ſcurvy as the reſt. They went often in queſt after ſome refreſhments, but meeting with none, they recommended themſelves to God's providence. The 12th, Cornelius Thyſſe did likewiſe take a medicinal potion againſt the ſcurvy. The 23d, as the cook was throwing out ſome water, he ſaw a bear juſt by the hut, but he ran away at the noiſe, before they could come at their guns. The 24th, they diſcovered another bear; three of them advancing towards him, he roſe upon his hindermoſt legs, and, being ſhot through the body by one of our guns, he began to bleed and to roar, and to bite one of our halberts with a great deal of fierceneſs; but, finding us too hard for him, he betook to his legs; being exceſſive eager after ſome freſh meat (of which we ſtood in great need for the recovery of our health) we purſued him with lanthorns and candles a great way, but to our ſorrow could not overtake him; which made us ſay to one another, that in caſe we were not ſupplied by God's peculiar providence with ſome refreſhment ſpeedily, the pain we endured muſt needs kill us before the return of our ſhips; but God's will be done. The 25th, Cornelius Thyſſe took another potion againſt the ſcurvy, being in a deplorable condition. The 14th of January Adrian Johnſon of Deft died, being the firſt of the ſeven, though the other ſix were full of pain, and very ill. The 15th, Fettje Otters died likewiſe; and on the 17th, Cornelius Thyſſe, being the man of all the reſt in whom they had put their moſt hopes, went to God. The remaining four were very weak, and had ſcarcely ſtrength left to ſtand upon their legs, yet they made ſhift to make coffins for theſe three, and put their bodies

into

into them. The 28th they ſaw the firſt fox, but could not take him. The 7th of February they had the good fortune to take a fox, to their no ſmall ſatisfaction, though in effect thy were too far gone to receive any benefit thereby.

They ſaw many bears, three or four, nay ſometimes ſix or ten together, but had not ſtrength enough to manage their guns; or if they had had, they could not have purſued them, being not in a condition to ſet one foot before another, nay not even to bite their biſcuits, for they were ſeized with moſt cruel pains, eſpecially in their loins and belly, which generally increaſed with the cold; one did ſpit blood, and another was afflicted with the bloody flux. Jerome Carcoen was ſtill ſomething better than the reſt, being ſtill able to fetch them ſome fuel for firing. The 23d, they began to be ſo weak, that they kept cloſe in their cabins, recommending themſelves to God's mercy. The 24th they ſaw the ſun again, which they had not ſeen ſince October 20th or 21ſt, in the preceding year. The 26th, being the laſt day (as we gueſs) they were able to write, and lived not long after; they left this following memorial behind them: "Four of us that are ſtill alive, lie flat upon the ground in our huts; we believe we could ſtill feed were there but one among us that could ſtir out of his hut to get us ſome fuel, but nobody is able to ſtir for pain; we ſpend our time in conſtant prayers, to implore God's mercy to deliver us out of this miſery, being ready whenever he pleaſes to call us; we are certainly not in a condition to live thus long without food or fire, and cannot aſſiſt one another in our mutual afflictions, but every one muſt bear our own burthen."

When the ſhips from Holland arrived there in 1635, they found them all dead, ſhut up cloſe in their tent, to ſecure their dead bodies againſt the bears and other ravenous creatures. This being the tent of Middleburgh, a baker who got aſhore firſt, happened to come to the back-door, which he broke open, and, running up ſtairs, found there upon the floor part of a dead dog that was laid there to dry; but making the beſt of his way down again, he trod upon the carcaſe of another dead dog (for they had two) at the ſtair foot in the buttery. From hence, paſſing through another door towards the fore-door, in order to open it, he ſtumbled in the dark over the dead bodies of the men, whom they ſaw (after the door was opened,) altogether in the ſame place, viz. three in coffins, Nicholas Floriſon, and another, each in a cabin, the other two upon ſome ſails ſpread upon the floor, with their knees drawn up to their chins. Coffins being ordered to be made for the four that had none, they were buried with the other three under the ſnow, till the ground becoming more penetrable, they were buried one by another, and certain ſtones laid upon their graves, to hinder the ravenous beaſts from digging up their carcaſes: theſe were the laſt that pretended to paſs the winter at Spitzbergen.

A SHORT

A SHORT AND TRUE ACCOUNT OF FORTY-TWO PERSONS WHO PERISHED BY SHIPWRECK NEAR SPITZBERGEN, IN THE YEAR 1646.

[From CHURCHILL's Collection, Vol. II. p. 361.]

JOHN CORNELIUS, of Muniken, being ordered to Spitzbergen to catch whales, ſet ſail from the Texel, in a galliot, the ſixth of May 1646, and arrived the third of June following near Spitzbergen, with an intention to anchor in the bay, but was by the vaſt floats of ice-ſhoals forced to keep out at ſea. After having in vain cruized up and down among the ice-ſhoals, they got into the bay; but perceiving two whales farther at ſea, they ſent out their ſloop in purſuit of the whales.

While they were rowing up and down to watch the motions of theſe creatures, they diſcovered at a diſtance a great ice-ſhoal, with ſomething white upon it, which at firſt ſight they imagined to be bears (they being generally white here); but one Ellert Johnſon, (who was in the ſloop to manage the harpcock or iron wherewith they ſtrike the whale) judging by the motion that it was ſomething elſe, perſuaded them to row that way; which being done accordingly, they not long after perceived the ſame to be a piece of a rope belonging to the ſails of a ſhip, which was held up by a man as a ſignal of their utmoſt diſtreſs; ſo they rowed up to it with all the oars they had, and on coming near them found (to their great ſurpriſe) four living men, and one dead one (all Engliſhmen), upon the ice-ſhoal, who upon their bended knees expreſſed their joy and thankfulneſs for ſo unexpected a deliverance from the jaws of death. They were taken into the ſloop, and carried into the bay on board the ſhip.

They had cut a great hole, in the nature of a ſubterraneous cave, into the ice, and round the entrance thereof had placed the pieces of ice that were cut out of the concavity, to defend themſelves againſt the violence of the winds and waves. In this hole they had ſpent fourteen days (it being ſo long ſince they had loſt their ſhip).

At firſt there were in all forty-two of them, and they had ſaved ſome victuals and tools with their ſloop. The commander perceiving after a little while that it was impoſſible for them to hold out long upon the ice-ſhoal, reſolved to go aſhore in the ſloop, with ſeventeen of his men, if he could, and to ſend them word afterwards how matters ſtood there. This was done accordingly; but it blowing very hard, and they having not heard the leaſt tidings of them ſince, they were afraid that they were drowned before they reached the ſhore.

There were then twenty-four left upon the ice-ſhoal; but the want of proviſions increaſing daily among them, and they being reduced to a ſtarving condition, and expecting nothing but preſent death, reſolved to divide themſelves, and to get upon ſeveral other ice-ſhoals, in hopes by ſome chance or other to come near to the ſhore; but whether ſome of them got aſhore, or whether they were taken up by ſome ſhip or other, or whether they were ſwallowed up by the mercileſs waves, they were not able to tell.

Certain it is that we found four of them (the miſerable remnants of forty-two) ſitting together upon this ice-ſhoal, overwhelmed with affliction, without any hopes of being ſaved, from the laſt extremity they were reduced to by froſt and hunger, before we came in full ſight of them with our ſloop, having had nothing to feed upon for ſome time but a leather belt (belonging to one of them), which they divided and eat, ſhare and ſhare alike, till all was conſumed.

After they were brought to our ſhip, our ſurgeon took all imaginable care for their recovery, notwithſtanding which three of them died in a few days after; ſo that of forty-two wherewith their ſhip was manned, no more than one eſcaped with life, who arriving in September 1646, in the galliot the Delft, upon the Meuſe, from thence returned to his native country in England.

A VOYAGE TOWARDS THE NORTH POLE, UNDERTAKEN BY HIS MAJESTY'S COMMAND, 1773, BY CONSTANTINE JOHN PHIPPS.

INTRODUCTION.

THE idea of a paſſage to the Eaſt Indies by the North Pole was ſuggeſted as early as the year 1527, by Robert Thorne, merchant, of Briſtol, as appears from two papers preſerved by Hackluit: the one addreſſed to King Henry VIII.; the other to Dr. Ley, the king's ambaſſador to Charles V. In that addreſſed to the king he ſays, "I know it to be my bounden duty to manifeſt this ſecret to your Grace, which hitherto, I ſuppoſe, has been hid." This ſecret appears to be the honour and advantage which would be derived from the diſcovery of a paſſage by the North Pole. He repreſents in the ſtrongeſt terms the glory which the kings of Spain and Portugal had obtained by their diſcoveries eaſt and weſt, and exhorts the king to emulate their fame by undertaking diſcoveries towards the north. He ſtates in a very maſterly ſtyle the reputation that muſt attend the attempt, and the great benefits, ſhould it be crowned with ſucceſs, likely to accrue to the ſubjects of this country, from their advantageous ſituation; which, he obſerves, ſeems to make the exploring this, the only hitherto undiſcovered part, the king's peculiar duty.

To remove any objection to the undertaking which might be drawn from the ſuppoſed danger, he inſiſts upon "the great advantages of conſtant day-light in ſeas that, men ſay, without great danger, difficulty, and peril, yea rather, it is impoſſible to paſs; for they being paſt this little way which they named ſo dangerous (which may be two or three leagues before they come to the pole, and as much more after they paſs the pole), it is clear from thenceforth the ſeas and lands are as temperate as in theſe parts."

In the paper addreſſed to Dr. Ley he enters more minutely into the advantages and practicability of the undertaking. Amongſt many other arguments to prove the value of the diſcovery, he urges, that by ſailing northward and paſſing the pole, the navigation from England to the Spice Iſlands would be ſhorter, by more than two thouſand leagues, than either from Spain by the Straits of Magellan, or Portugal by the Cape of Good Hope; and to ſhew the likelihood of ſucceſs in the enterprize he ſays, it is as probable that the coſmographers ſhould be miſtaken in the opinion they entertain of the polar regions being impaſſable from extreme cold, as it has been found they were, in ſuppoſing the countries under the Line to be uninhabitable from exceſſive heat. With all the ſpirit of a man convinced of the glory to be gained, and the probability of ſucceſs in the undertaking, he adds, "God knoweth, that though by it I ſhould have no great intereſt, yet I have had, and ſtill have, no little mind of this buſineſs; ſo that if I had faculty to my will, it ſhould be the firſt thing that I would underſtand, even to attempt, if our ſeas northward be navigable to the pole or no." Notwithſtanding the many good arguments, with which he ſupported his propoſition, and the offer of his own ſervices, it does not appear that he prevailed ſo far as to procure an attempt to be made.

Borne, in his Regiment of the Sea, written about the year 1577, mentions this as one of the five ways to Cathay, and dwells chiefly on the mildneſs of climate which he imagines muſt be found near the Pole, from the conſtant preſence of the ſun during the ſummer. Theſe arguments, however, were ſoon after controverted by Blundeville, in his treatiſe on Univerſal Maps.

In 1578, George Beſt, a gentleman who had been with Sir Martin Frobiſher in all his voyages for the diſcovery of a north-weſt paſſage, wrote a very ingenious diſcourſe, to prove all parts of the world habitable.

No

No voyage, however, appears to have been undertaken to explore the circumpolar ſeas till the year 1607, when "Henry Hudſon was ſet forth, at the charge of certain worſhipful merchants of London, to diſcover a paſſage by the North Pole to Japan and China." He ſailed from Graveſend on the firſt of May, in a ſhip called the Hopewell, having with him ten men and a boy. I have taken great pains to find his original journal, as well as thoſe of ſome others of the adventurers who followed him, but without ſucceſs: the only account I have ſeen is an imperfect abridgement in Purchas, by which it is not poſſible to lay down his track; from which however, I have drawn the following particulars:—He fell in with the land to the Weſtward in latitude 73°, on the twenty-firſt of June, which he named Hold-with-Hope. The twenty-ſeventh, he fell in with Spitſbergen, and met with much ice; he got to 80° 23′, which was the northernmoſt latitude he obſerved in. Giving an account of the concluſion of his diſcoveries, he ſays, "On the ſixteenth of Auguſt I ſaw land, by reaſon of the clearneſs of the weather, ſtretching far into 82°, and, by the bowing and ſhewing of the ſky, much further; which when I firſt ſaw, I hoped to have had a free ſea between the land and the ice, and meant to have compaſſed this land by the North; but now finding it was impoſſible, by means of the abundance of ice compaſſing us about by the North, and joining to the land; and ſeeing God did bleſs us with a wind, we returned, bearing up the helm." He afterwards adds: "And this I can aſſure at this preſent, that between 78° and an half, and 82°, by this way there is no paſſage."—In conſequence of this opinion, he was the next year employed on the North-Eaſt diſcovery.

In March 1609, old ſtyle, "A voyage was ſet forth by the right worſhipful Sir Thomas Smith, and the reſt of the Muſcovy Company, to Cherry Iſland, and for a further diſcovery to be made towards the North Pole, for the likelihood of a trade or a paſſage that way, in the ſhip called the Amity, of burthen ſeventy tuns, in which Jonas Poole was maſter, having fourteen men and one boy."—He weighed from Blackwall, March the firſt old ſtyle; and after great ſeverity of weather, and much difficulty from the ice, he made the South part of Spitſbergen on the ſixteenth of May. He ſailed along and ſounded the coaſt, giving names to ſeveral places, and making many very accurate obſervations. On the twenty-ſixth, being near Fair Foreland, he ſent his mate on ſhore;—and ſpeaking of the account he gave at his return, ſays, "Moreover, I was certified that all the ponds and lakes were unfrozen, they being freſh water; which putteth me in hope of a mild ſummer here, after ſo ſharp a beginning as I have had; and my opinion is ſuch, and I aſſure myſelf it is ſo, that a paſſage may be ſoon attained this way by the Pole, as any unknown way whatſoever, by reaſon the ſun doth give a great heat in this climate, and the ice (I mean that freezeth here) is nothing ſo huge as I have ſeen in ſeventy three degrees."

Theſe hopes, however, he was ſoon obliged to relinquiſh for that year, having twice attempted in vain to get beyond 79° 50′. On the twenty-firſt of June, he ſtood to the Southward, to get a loading of fiſh, and arrived in London the laſt of Auguſt. He was employed the following year (1611) in a ſmall bark called the Elizabeth, of fifty tuns. The inſtructions for this voyage, which may be found at length in Purchas, are excellently drawn up: they direct him, after having attended the fiſhery for ſome time, to attempt diſcoveries to the North Pole as long as the ſeaſon will permit; with a diſcretionary clauſe, to act in unforeſeen caſes as ſhall appear to him moſt for the advancement of the diſcovery, and intereſt of his employers. This however proved an unfortunate voyage: for having ſtaid in Croſs Road till the ſixteenth of June, on account of the bad weather, and great quantity of ice, he ſailed from thence on that day, and ſteered W. by N. fourteen leagues, where he found a bank of ice: he returned to Croſs Road; from

whence he failed, he found the ice to lie close to the land about the latitude of 80°, and that it was impossible to pass that way; and the strong tides making it dangerous to deal with the ice, he determined to stand along it to the Southward, to try if he could find the sea more open that way, and so get to the Westward, and proceed on his voyage. He found the ice to lie nearest S. W. and S. W. by S., and ran along it about an hundred and twenty leagues. He had no ground near the ice at 160, 180, or 200 fathoms: perceiving the ice still to trend to the southward, he determined to return to Spitsbergen for the fishery, where he lost his ship.

In the year 1614, another voyage was undertaken, in which Baffin and Fotherby were employed. With much difficulty, and after repeated attempts in vain with the ship, they got with their boats to the firm ice, which joined to Red-Beach; they walked over the ice to that place, in hopes of finding whale-fins, &c., in which they were disappointed. Fotherby adds, in his account: "thus, as we could not find what we desired to see, so did we behold that which we wished had not been there to be seen; which was great abundance of ice, that lay close to the shore, and also off at sea as far as we could discern." On the eleventh of August they sailed from Fair-Haven, to try if the ice would let them pass to the Northward, or North-east-ward; they steered from Cape Barren, or Vogel Sang, N. E. by E. eight leagues, where they met with the ice, which lay E. by S. and W. by N. The fifteenth of August they saw ice frozen in the sea of above the thickness of an half-crown.

Fotherby was again fitted out the next year in a pinnace of twenty tons, called the Richard, with ten men. In this voyage he was prevented by the ice from getting farther than in his last. He refers to a chart, in which he had traced the ship's course on every traverse, to shew how far the state of that sea was discovered between 80° and 71° of latitude, and for 26° of longitude from Hackluit's headland. He concludes the account of his voyage in the following manner:

"Now, if any demand my opinion concerning hope of a passage to be found in those seas, I answer; that it is true, that I both hoped and much desired to have passed further than I did, but was hindered with ice; wherein although I have not attained my desire, yet forasmuch as it appears not yet to the contrary, but that there is a spacious sea betwixt Groinland and King James his new land [Spitsbergen] although much pestered with ice; I will not seem to diswade this worshipful company from the yearly adventuring of 150 or 200 pounds at the most, till some further discovery be made of the said seas and lands adjacent." It appears that the Russia company, either satisfied with his endeavours and despairing of further success, or tired of the expence of the undertaking, never employed any more ships on this discovery.

All these voyages having been fitted out by private adventurers, for the double purpose of discovery and present advantage; it was natural to suppose, that the attention of the navigators had been diverted from pursuing the more remote and less profitable object of the two, with all the attention that could have been wished. I am happy, however, in an opportunity of doing justice to the memory of these men; which, without having traced their steps, and experienced their difficulties, it would have been impossible to have done. They appear to have encountered dangers, which at that period must have been particularly alarming from their novelty, with the greatest fortitude and perseverance; as well as to have shewn a degree of diligence and skill, not only in the ordinary and practical, but more scientific parts of their profession, which might have done honour to modern seamen, with all their advantages of later improvements. This, when compared with the accounts given of the state of navigation, even within these forty years, by the most eminent foreign authors, affords the most flattering and satis-

factory proof of the very early exiſtence of that decided ſuperiority in naval affairs, which has carried the power of this country to the height it has now attained.

This great point of geography, perhaps the moſt important in its conſequences to a commercial nation and maritime power, but the only one which had never yet been the object of royal attention, was ſuffered to remain without further inveſtigation, from the year 1615 till 1773, when the Earl of Sandwich, in conſequence of an application which had been made to him by the Royal Society, laid before his Majeſty, about the beginning of February, a propoſal for an expedition to try how far navigation was practicable towards the North Pole; which his Majeſty was pleaſed to direct ſhould be immediately undertaken, with every encouragement that could countenance ſuch an enterprize, and every aſſiſtance that could contribute to its ſucceſs.

As ſoon as I heard of the deſign I offered myſelf, and had the honour of being entruſted with the conduct of this undertaking. The nature of the voyage requiring particular care in the choice and equipment of the ſhips, the Racehorſe and Carcaſs bombs were fixed upon as the ſtrongeſt, and therefore propereſt for the purpoſe. The probability that ſuch an expedition could not be carried on without meeting with much ice, made ſome additional ſtrength neceſſary; they were therefore immediately taken into dock, and fitted in the moſt complete manner for the ſervice. The complement for the Racehorſe was fixed at ninety men, and the ordinary eſtabliſhment departed from, by appointing an additional number of officers, and entering effective men inſtead of the uſual number of boys.

I was allowed to recommend the officers; and was very happy to find, during the courſe of the voyage, by the great aſſiſtance I received on many occaſions from their abilities and experience, that I had not been miſtaken in the characters of thoſe upon whom ſo much depended in the performance of this ſervice. Two maſters of Greenlandmen were employed as pilots for each ſhip. The Racehorſe was alſo furniſhed with the new chain-pumps made by Mr. Cole, according to Captain Bentinck's improvements, which were found to anſwer perfectly well. We alſo made uſe of Dr. Irving's apparatus for diſtilling freſh water from the ſea, with the greateſt ſucceſs. Some ſmall but uſeful alterations were made in the ſpecies of proviſions uſually ſupplied in the navy; an additional quantity of ſpirits was allowed for each ſhip, to be iſſued at the diſcretion of the commanders, when extraordinary fatigue or ſeverity of weather might make it expedient. A quantity of wine was alſo allotted for the uſe of the ſick. Additional cloathing, adapted to the rigour of climate, which from the relations of former navigators we were taught to expect, was ordered to be put on board, to be given to the ſeamen when we arrived in the high latitudes. It was foreſeen that one or both of the ſhips might be ſacrificed in the proſecution of this undertaking; the boats for each ſhip were therefore calculated, in number and ſize, to be fit, on any emergency, to tranſport the whole crew. In ſhort, every thing which could tend to promote the ſucceſs of the undertaking, or contribute to the ſecurity, health, and convenience of the ſhips' companies, was granted.

The Board of Longitude agreed with Mr. Iſrael Lyons to embark in this voyage, to make aſtronomical obſervations. His reputation for mathematical knowledge was too well eſtabliſhed to receive any addition from the few opportunities which a voyage in ſuch unfavourable climates could afford. The ſame Board ſupplied him with ſuch inſtruments as they imagined might be uſeful for making obſervations and experiments. The Royal Society favoured me with ſuch information as they judged might ſerve to direct my enquiries, whenever the circumſtances of the voyage ſhould afford me leiſure and opportunity for making obſervations. Beſides theſe learned bodies, I was obliged

to

to many individuals for hints; amongſt whom it is with pleaſure I mention Monſieur D'Alembert, who communicated to me a ſhort paper, which, from the conciſeneſs and elegance with which it was drawn up, as well as from the number of intereſting objects that it recommended to my attention, would have done honour to any perſon whoſe reputation was not already eſtabliſhed upon ſo ſolid a foundation as that learned philoſopher's. To Mr. Banks I was indebted for very full inſtructions in the branch of natural hiſtory, as I have ſince been for his aſſiſtance in drawing up the account of the productions of that country; which I acknowledge with peculiar ſatisfaction, as inſtances of a very long friendſhip which I am happy in an opportunity of mentioning.

As a voyage of this kind would probably afford many opportunities of making experiments and obſervations in matters relative to navigation, I took care to provide myſelf with all the beſt inſtruments hitherto in uſe, as well as others which had been imperfectly, or never, tried.

The length of the ſecond pendulum in ſo high a latitude as I was likely to reach, appearing to me an experiment too intereſting to be neglected, I deſired Mr. Cumming to make me ſuch an inſtrument as he thought would beſt anſwer the purpoſe. That modeſty and candour which always attend real merit, induced him to lend me the identical pendulum with which Mr. Graham had made his experiments, rather than furniſh me with one of his own conſtruction; but the judgment as well as ſkill with which the apparatus joined to it was contrived and executed, notwithſtanding the ſhortneſs of the time, will, I am ſure, do him credit.

The Board of Longitude ſent two watch machines for keeping the longitude by difference of time: one conſtructed by Mr. Kendal, on Mr. Harriſon's principles; the other by Mr. Arnold. I had alſo a pocket watch conſtructed by Mr. Arnold, by which I kept the longitude to a degree of exactitude much beyond what I could have expected; the watch having varied from its rate of going only 2′ 40″ in one hundred and twenty-eight days.

In the Journal which follows, I mean to confine myſelf to the occurrences of the voyage as they ſucceeded in order of time, which, for the convenience of the generality of readers, I have reduced from the nautical to the civil computation: to this I ſhall add, by way of Appendix, an account of all the experiments and obſervations under their reſpective heads, that thoſe who intereſt themſelves in any particular branch, may find whatever they want, unmixed with foreign matters; while thoſe who may wiſh only to trace the whole progreſs of the voyage, as well as thoſe who may be ſatisfied with the general reſults of the experiments, will find the account unincumbered with that detail which I wiſh to ſubmit to others, who may chuſe to examine more minutely, and compare the facts with the concluſions.

A voyage of a few months to an uninhabited extremity of the world, the great object of which was to aſcertain a very intereſting point in geography, cannot be ſuppoſed to afford much matter for the gratification of mere curioſity. The experiments and obſervations may poſſibly from their novelty, and the peculiar circumſtances of the climate in which they were made, afford ſome entertainment to philoſophers; and might perhaps have been more numerous and ſatisfactory, if the purſuit of the great object of the voyage had not rendered them, however intereſting in themſelves, but a ſecondary conſideration.

JOURNAL.

APRIL the nineteenth, 1773, I received my commiſſion for the Racehorſe, with an order to get her fitted with the greateſt diſpatch for a voyage of diſcovery towards the North Pole, and to proceed to the Nore for further orders.

The

The twenty-third, the ſhip was hauled out of dock.

May the twenty-firſt, the ſhip being manned and rigged, and having got in all the proviſions and ſtores, except the gunner's, we fell down to Galleons.

The twenty-ſecond, we received on board the powder, with eight ſix-pounders, and all the gunner's ſtores. Lord Sandwich gave us the laſt mark of the obliging attention he had ſhewn during the whole progreſs of the equipment, by coming on board to ſatisfy himſelf, before our departure, that the whole had been completed to the wiſh of thoſe who were embarked in the expedition. The eaſterly winds prevented our going down the river till the twenty-ſixth, when I received my inſtructions for the voyage, dated the twenty-fifth; directing me to fall down to the Nore in the Racehorſe, and there taking under my command the Carcaſs, to make the beſt of my way to the northward, and proceed up to the North Pole, or as far towards it as poſſible, and as nearly upon a meridian as the ice or other obſtructions might admit; and, during the courſe of the voyage, to make ſuch obſervations of every kind as might be uſeful to navigation, or tend to the promotion of natural knowledge: in caſe of arriving at the Pole, and even finding free navigation on the oppoſite meridian, not to proceed any farther; and at all events to ſecure my return to the Nore before the winter ſhould ſet in. There was alſo a clauſe authorizing me to proceed, in unforeſeen caſes, according to my own diſcretion; and another clauſe directing me to proſecute the voyage on board the Carcaſs, in caſe the Racehorſe ſhould be loſt or diſabled.

The twenty-ſeventh, I anchored at the Nore, and was joined by Captain Lutwidge, in the Carcaſs, on the thirtieth: her equipment was to have been in all reſpects the ſame as that of the Racehorſe; but when fitted, Captain Lutwidge finding her too deep in the water to proceed to ſea with ſafety, obtained leave of the admiralty to put ſix more guns on ſhore, to reduce the complement to eighty men, and return a quantity of proviſions proportionable to that reduction. The officers were recommended by Captain Lutwidge, and did juſtice to his penetration by their conduct in the courſe of the voyage. During our ſtay here, Mr. Lyons landed with the aſtronomical quadrant at Sheerneſs fort, and found the latitude to be 51° 31′ 30″, longitude 0° 30′ Eaſt. The eaſterly winds prevented our moving this day and the following.

The ſecond of June, having the wind to the weſtward of north, at five in the morning I made the ſignal to weigh; but in leſs than half an hour the wind ſhifting to the eaſtward, and blowing freſh, I furled the topſails. The wind came in the afternoon to N. by E., we weighed, but did not get far, the tide of flood making againſt us.

The third, the wind blowing freſh all day eaſterly, we did not move.

The fourth, the wind coming round to the weſtward at ſix in the morning, I weighed immediately, and ſent the boat for Captain Lutwidge, to deliver him his orders. At ten A. M. longitude by the watch 56′ E. At eight in the evening we had got as far as Balſey cliff, between Orford and Harwich. Little wind at night.

The fifth, anchored in Hoſeley Bay at half paſt ſeven in the evening, in five and an half fathom water. Orford caſtle N. E. by N.

Angle between Aldborough church and Orford light-houſe,	7°	38′
Light-houſe and Orford church,	18	16
Orford church and caſtle,	2	20
Caſtle and Hoſeley church,	100	59
Hoſeley and Balſey church,	35	27

The ſixth, at five in the morning, the wind at S. S. W., weighed, and ſtood out to ſea, finding I might loſe two tides by going through Yarmouth Roads. Examined the log-line,

log-line, which was marked forty-nine feet; the glaſs was found, by comparing it with the time-keeper, to run thirty ſeconds: at noon latitude obſerved 52° 16′ 54″, longitude by the watch 1° 30′ 15″ E.

Angle between Southwold and Walderſwick,	-	-	10°	39′
Walderſwick and Dunwich,	-	-	20	21
Dunwich and Aldborough,	-	-	46	53

Southwold N. W. half N. ſuppoſed diſtance three leagues. We concluded the latitude of Southwold to be 52° 22′, and longitude 1° 18′ 15″ E. The dip was 73° 22′.

The ſeventh, the wind was northerly all day, and blew freſh in the morning. We had ſtood far out in the night and the day before, to clear the Lemon and Ower.

The eighth, little wind moſt part of the day, with a very heavy ſwell. Stood in for the land. At half paſt ten longitude by the watch 0° 41′ 15″ E. At noon the latitude was 53° 38′ 37″. We ſaw the high land near the Spurn, in the evening.

The ninth, about noon Flamborough Head bore N. W. by N. diſtant about ſix miles: we were by obſervation in latitude 54° 4′ 54″, longitude 0° 27′ 15″ E.; which makes Flamborough Head, in latitude 54° 9′, longitude 0° 19′ 15″ E. In the afternoon we were off Scarborough. Almoſt calm in the evening.

The tenth, anchored in the morning for the tide in Robin Hood's Bay, with little wind at N. W.: worked up to Whitby Road next tide, and anchored there at four in the afternoon, in fifteen fathom, with very little wind.

The eleventh, calm in the morning; completed our water, live ſtock, and vegetables. At nine in the morning longitude obſerved by the watch 1° 55′ 30″ W.; Whitby abbey bore S. half W. Weighed with the wind at S. E., and ſteered N. E. by N. to get ſo far into the mid-channel as to make the wind fair eaſterly or weſterly, without being too near either ſhore, before we were clear of Shetland and the coaſt of Norway.

The twelfth, the wind at S. E. and the ſhip well advanced, I ordered the allowance of liquor to be altered, ſerving the ſhip's company one fourth of their allowance in beer, and the other three fourths in brandy; by which means the beer was made to laſt the whole voyage, and the water conſiderably ſaved. One half of this allowance was ſerved immediately after dinner, and the other half in the evening. It was now light enough all night to read upon deck.

The thirteenth, the weather ſtill fine but conſiderably leſs wind than the day before, and in the afternoon more northerly. The longitude at ten in the morning was found by my watch 0° 6′ W. We took three obſervations of the moon and ſun for the longitude; the extremes differed from one another near two degrees: the mean of the three gave the longitude 1° 37′ E. At noon the latitude obſerved was 59° 32′ 31″. We found a difference of 36′ between the latitude by dead reckoning and obſervation, the ſhip being ſo much more northerly than the reckoning. The diſtance by this log was too ſhort by forty-three miles. A log marked forty-five feet, according to the old method, would have agreed with the obſervation within two miles in the two days' run. The circumſtance of ſteering upon a meridian, which afforded me ſuch frequent opportunities of detecting the errors of the log, induced me to obſerve with care the comparative accuracy of the different methods of dividing the line, recommended by mathematicians, or practiſed by ſeamen. In the afternoon I went on board the Carcaſs to compare the time-keepers by my watch. At ſix in the evening the longitude by my watch 0° 4′ E. This evening the ſun ſet at twenty-four minutes paſt nine, and

bore

bore about N. N. W. by the compaſs. The clouds made a beautiful appearance long after to the northward, from the reflection of the ſun below the horizon. It was quite light all night: the Carcaſs made the ſignal for ſeeing the land in the evening.

The fourteenth, little wind, or calm, all day; but very clear and fine weather. Made ſeveral different obſervations by the ſun and moon, and by my watch. The longitude of the ſhip was found by my watch, at ten in the morning, to be 1° 11′ 45″ W. The longitude by the lunar obſervations differed near two degrees from one another. By the mean of them the ſhip was in longitude 2° 57′ 45″ W. Some Shetland boats came on board with fiſh. At noon the latitude by obſervation was 60° 16′ 45″. At one in the afternoon the dip was obſerved to be 73° 50′; and at eight, 75° 18′: the evening calm, and very fine; the appearance of the ſky to the northward very beautiful. Variation, by the mean of ſeveral obſervations, 22° 25′ W.

The fifteenth, by an obſervation at eight in the morning, the longitude of the ſhip was by the watch 0° 39′ W: dip 74° 52′. At half paſt ten in the morning, the longitude, from ſeveral obſervations of the ſun and moon, was 0° 17′ W.; at noon, being in latitude 60° 19′ 8″, by obſervation, I took the diſtance between the two ſhips by the megameter; and from that baſe determined the poſition of Hangcliff, which had never before been aſcertained, though it is a very remarkable point, and frequently made by ſhips. According to theſe obſervations it is in latitude 60° 9′, and longitude 0° 56′ 30″ W. In the Appendix I ſhall give an account of the manner of taking ſurveys by this inſtrument, which I believe never to have been practiſed before. At one, obſerved the dip to be 75°. A thick fog came on in the afternoon, with a flat calm; we could not ſee the Carcaſs, but heard her anſwer the ſignals for keeping company. Variation, from the mean of ſeveral obſervations, 25° 1′ W.

The ſixteenth, a very thick fog in the morning; latitude obſerved at noon 60° 29′ 17″; the dip was obſerved at nine in the evening to be 76° 45′. In the afternoon, the weather clear, and the wind fair, ſteered N. N. E.: ſent Captain Lutwidge his further orders and places of rendezvous.

The ſeventeenth, wind fair, and blowing freſh at S. S. W., continued the courſe N. N. E.: ordered the people a part of the additional clothing: ſaw an Engliſh ſloop, but had no opportunity of ſending letters on board, the ſea running high. At ten in the morning, longitude by the watch 0° 19′ 45″ W: at noon, the latitude obſerved was 62° 59′ 27″. The ſhip had outrun the reckoning eleven miles. I tried Bouguer's log twice this day, and found it give more than the common log. Variation 19° 22′ W.

The eighteenth, little wind all day, but fair, from S. S. W. to S. E.: ſtill ſteering N. N. E.: latitude obſerved at noon 65° 18′ 17″. At three in the afternoon, ſounded with three hundred fathom of line, but got no ground. Longitude by the watch 1° 0′ 30″ W.

The nineteenth, wind to the N. W. Took the meridian obſervation at midnight for the firſt time: the ſun's lower limb 0° 37′ 30″ above the horizon; from which the latitude was found 66° 54′ 39″ N.: at four in the afternoon, longitude by the watch 0° 58′ 45″ W.: at ſix the variation 19° 11′ W.

The twentieth, almoſt calm all day. The water being perfectly ſmooth, I took this opportunity of trying to get ſoundings at much greater depths than I believe had ever been attempted before. I ſounded with a very heavy lead the depth of ſeven hundred and eighty fathom, without getting ground; and by a thermometer invented by lord Charles Cavendiſh for this purpoſe, found the temperature of the water at

that depth to be 26° of Fahrenheit's thermometer; the temperature of the air being 48° and a half.

We began this day to make uſe of Doctor Irving's apparatus for diſtilling freſh water from the ſea: repeated trials gave us the moſt ſatisfactory proof of its utility: the water produced from it was perfectly free from ſalt, and wholeſome, being uſed for boiling the ſhip's proviſions; which convenience would alone be a deſirable object in all voyages, independent of the benefit of ſo uſeful a reſource in caſe of diſtreſs for water. The quantity produced every day varied from accidental circumſtances, but was generally from thirty-four to forty gallons, without any great addition of fuel. Twice indeed the quantity produced was only twenty-three gallons on each diſtillation; this amounts to more than a quart for each man, which, though not a plentiful allowance, is much more than what is neceſſary for ſubſiſtence. In caſes of real neceſſity I have no reaſon to doubt that a much greater quantity might be produced without an inconvenient expence of fuel.

The twenty-firſt, a freſh gale at S. E. all day; ſteered N. N. E. At four in the morning we ſpoke with a ſnow from the ſeal fiſhery, bound to Hamburg, by which we ſent ſome letters. At ſix in the morning the variation, by the mean of ſeveral obſervations, was 23° 18′ W. Longitude by the watch at nine was 0° 34′ 30″ W. Latitude obſerved at noon 68° 5′.

The twenty-ſecond, calm moſt part of the day; rainy and rather cold in the evening. At noon obſerved the dip to be 77° 52′.

The twenty-third, very foggy all day; the wind fair; altered the courſe, and ſteered N. E. and E. N. E., to get more into the mid channel, and to avoid falling in with the weſtern ice, which, from the increaſing coldneſs of the weather, we concluded to be near. At ſeven o'clock in the morning, being by our reckoning to the northward of 72°, we ſaw a piece of drift wood, and a ſmall bird called a Red-poll. Dip obſerved at nine in the evening to be 81° 30′.

The twenty-fourth, very foggy all the morning; the wind came round to the northward. The dip obſerved at noon was 80° 35′. In the afternoon, the air much colder than we had hitherto felt it; the thermometer at 34°. A fire made in the cabin for the firſt time, in latitude 73° 40′.

The wind northerly; with a great ſwell; ſome ſnow, but in general clear. At eight in the morning, the longitude obſerved by the watch was 7° 15′ E. Made ſeveral obſervations on the variation, which we found, by thoſe taken at ſeven in morning, to be 17° 9′ W.; by others at three in the afternoon, only 7° 47′ W. I could not account for this very ſudden and extraordinary decreaſe, as there were ſeveral different obſervations taken both in the morning and evening, which agreed perfectly well with each other, without any apparent cauſe which could produce an error affecting all the obſervations of either ſet. At eight in the evening the longitude by the moon was 12° 57′ 30″ E., which differed 2° 35′ from that by the watch. Little wind at night.

The twenty-ſixth, little wind all day; the weather very fine and moderate. The latitude obſerved at noon was 74° 25′. The thermometer expoſed to the ſun, which ſhone very bright, roſe from 41° to 61° in twenty minutes. By each of two lunar obſervations which I took with a ſextant of four inches radius, at half paſt one, the longitude was 9° 7′ 30″ E.; which agreed within thirty-ſeven minutes with an obſervation made by the watch at half an hour after three, when the longitude was 8° 52′ 30″ E. Dip 79° 22′.

The

The twenty-ſeventh, at midnight the latitude obſerved was 74° 26′. The wind came to the S. W., and continued ſo all day, with a little rain and ſnow. The cold did not increaſe. We ſteered N. by E. At ſeven in the morning the variation, by a mean of ſeveral obſervations, was found to be 20° 38′ W. We were in the evening, by all our reckonings, in the latitude of the ſouth part of Spitſbergen, without any appearance of ice or ſight of land, and with a fair wind.

The twenty eighth, leſs wind in the morning than the day before, with rain and ſleet: continued ſteering to the northward. At five in the afternoon picked up a piece of drift wood, which was fir, and not worm-eaten: ſounded in two hundred and ninety fathom; no ground. At ſix the longitude by the watch was 7° 50′ E.: between ten and eleven at night, ſaw the land to the eaſtward at ten or twelve leagues diſtance. At midnight, dip 81° 7′.

The twenty-ninth, the wind northerly; ſtood cloſe in with the land. The coaſt appeared to be neither habitable nor acceſſible; for it was formed by high, barren, black rocks, without the leaſt marks of vegetation; in many places bare and pointed, in other parts covered with ſnow, appearing even above the clouds: the vallies between the high cliffs were filled with ſnow or ice. This proſpect would have ſuggeſted the idea of perpetual winter, had not the mildneſs of the weather, the ſmooth water, bright ſunſhine, and conſtant day-light, given a cheerfulneſs and novelty to the whole of this ſtriking and romantic ſcene.

I had an opportunity of making many obſervations near the Black point. Latitude obſerved at noon 77° 59′ 11″. The difference of latitude, from the laſt obſervation on the twenty-ſeventh at midnight to this day at noon, would, according to the old method of marking the log, have been two hundred and thirteen miles; which agrees exactly with the obſervation. At three in the afternoon, brought to and ſounded one hundred and ten fathoms; ſoft muddy ground: hoiſted the boat and tried the ſtream; found it, both by the common and Bouguer's log (which agreed exactly) to run half a knot north; Black Point bearing E. N. E. At four the longitude by the watch was 9° 31′ E.: at eight the variation, by the mean of nineteen obſervations, 11° 53′ W. I could not account from any apparent cauſe for this great change in the variation: the weather was fine, the water ſmooth, and every precaution we could think of uſed to make the obſervations accurate. The dip was 80° 26′. Plying to the northward.

The thirtieth, at midnight, the latitude by obſervation was 78° 0′ 50″. At four in the morning, by Lord Charles Cavendiſh's thermometer the temperature of the water at the depth of a hundred and eighteen fathoms was 31° of Fahrenheit's; that of the air was at the ſame time 40° and a half. At nine in the morning we ſaw a ſhip in the N. W., ſtanding in for the land. Having little wind this morning, and that northerly, I ſtood in for the land, with an intention to have watered the ſhip, and got out immediately, but was prevented by the calm which followed. At noon the latitude obſerved was 78° 8′; the dip 79° 30′. At two in the afternoon we ſounded in a hundred and fifteen fathoms; muddy bottom: at the ſame time we ſent down Lord Charles Cavendiſh's thermometer, by which we found the temperature of the water at that depth to be 33°; that of the water at the ſurface was at the ſame time 40°, and in the air 44° and three fourths. Fahrenheit's thermometer plunged in water brought up from the ſame depth, ſtood at 38° and a half. This evening the maſter of a Greenland ſhip came on board, who told me, that he was juſt come out of the ice which lay to the weſtward about ſixteen leagues off, and that three ſhips had been loſt this year, two Engliſh, and one Dutch. The weather fine, and rather warm. At ſix in the evening the longitude by my watch was 9° 28′ 45″ E.

July the firſt, little wind northerly, or calm, all day: the weather very fine, and ſo warm that we ſat without a fire, and with one of the ports open in the cabin. At noon the latitude obſerved was 78° 13′ 36″; Black Point bearing S. 78° E.; which makes the latitude of that point nearly the ſame as that of the ſhip, and agrees very well with the chart of this coaſt in Purchas.

The ſecond, little wind, and calms, all day; the weather very fine. At ſix in the morning five ſail of Greenlandmen in ſight. At noon the latitude obſerved was 78° 22′ 41″. I took a ſurvey of the coaſt, as far as we could ſee: I took alſo with the megameter the altitudes of ſeveral of the mountains: but as there is nothing particularly intereſting to navigators in this part of the coaſt, I ſhall only mention the height of one mountain, which was fifteen hundred and three yards. This may ſerve to give ſome idea of the appearance and ſcale of the coaſt. At half paſt ſix the longitude by the watch was 9° 8′ 30″ E.: variation 14° 55′ W.

The third, latitude at midnight 78° 23′ 46″: dip. 80° 45′. The weather fine, and the wind fair all day. Running along by the coaſt of Spitſbergen all day: ſeveral Greenlandmen in ſight. Between nine and ten in the evening we were abreaſt of the North Foreland, bearing E. by S. half S., diſtance one mile and half. Sounded in twenty fathom; rocky ground.

The fourth, very little wind in the morning. At noon the latitude by obſervation was 79° 31′. Magdalena Hook bore N. 39° E. diſtant four miles; which gives the latitude of that place 79° 34′; the ſame as Fotherby obſerved it to be in 1614. Stood in to a ſmall bay to the Southward of Magdalena and Hamburgher's Bay: anchored with the ſtream anchor, and ſent the boat for water. About three in the afternoon, when the boat was ſent on ſhore, it appeared to be high water, and ebbed about three feet. This makes high water full and change at half an hour paſt one, or with a S. S. W. moon; which agrees exactly with Baffin's obſervation in 1613. The flood comes from the Southward. Went aſhore with the aſtronomer, and inſtruments, to obſerve the variation. A thick fog came on before we had completed the obſervations. The ſhip driving, I weighed and ſtood out to ſea under an eaſy ſail, firing guns frequently to ſhew the Carcaſs where we were; and in leſs than two hours joined her. Soon after (about four in the morning of the fifth) the Rockingham Greenland Ship ran under our ſtern, and the maſter told me he had juſt ſpoke with ſome ſhips from which he learnt, that the ice was within ten leagues of Hacluyt's Head Land, to the North-Weſt. In conſequence of this intelligence, I gave orders for ſteering in towards the Head Land; and if it ſhould clear up, to ſteer directly for it; intending to go North from thence, till ſome circumſtance ſhould oblige me to alter my courſe.

The fifth, at five the officer informed me, that we were very near ſome iſlands off Dane's Gat, and that the pilot wiſhed to ſtand farther out; I ordered the ſhip to be kept N. by W., and hauled farther in, when clear of the iſlands. At noon I ſteered North, ſeeing nothing of the land; ſoon after I was told that they ſaw the ice: I went upon deck, and perceived ſomething white upon the bow, and heard a noiſe like the ſurf upon the ſhore; I hauled down the ſtudding ſails, and hailed the Carcaſs to let them know that I ſhould ſtand for it to make what it was, having all hands upon deck ready to haul up at a moment's warning: I deſired that they would keep cloſe to us, the fog being ſo thick, and have every body up ready to follow our motions inſtantaneouſly, determining to ſtand on under ſuch ſail as ſhould enable us to keep the ſhips under command, and not riſk parting company. Soon after two ſmall pieces of ice not above three feet ſquare paſſed us, which we ſuppoſed to have floated from the ſhore. It was not long before we ſaw ſomething on the bow, part black and part covered

covered with ſnow, which from the appearance we took to be iſlands, and thought that we had not ſtood far enough out; I hauled up immediately to the N. N. W. and was ſoon undeceived, finding it to be ice which we could not clear upon that tack; we tacked immediately, but the wind and ſea both ſetting directly upon it, we neared it very faſt, and were within little more than a cable's length of the ice, whilſt in ſtays. The wind blowing freſh, the ſhips would have been in danger on the lee ice, had not the officers and men been very alert in working the ſhip. The ice, as far as we could then ſee, lay nearly E. by N. and W. by S. At half paſt ſeven in the evening, the ſhip running entirely to the Southward, and the weather clearing a little, I tacked, and ſtood for the ice. When I ſaw it, I bore down to make it plain; at ten the ice lay from N. W. to eaſt, and no opening. Very foggy, and little wind, all day; but not cold. At eleven came on a thick fog. At half paſt midnight, heard the ſurge of the ice, and hauled the wind to the eaſtward.

The ſixth, clear weather all day, and the wind Eaſterly off the ice. In the morning I ſtood in to make the land plain. At ſix, was within four miles of the ice, which bore from E. N. E. to W. N. W.: at ten near Vogel Sang: at noon, latitude obſerved 79° 56′ 39″; wind Eaſterly. Continued plying to windward between the land and the ice: was within a quarter of a mile from the ice, which lay from E. N. E. to N. N. W., when I tacked at two in the afternoon; and within half a cable's length at midnight: the Carcaſs was a great way aſtern and to leeward all day. Being ſo near the laſt rendezvous, I did not chuſe to bring to for her, but was very anxious to avail myſelf of this favourable opportunity, having the wind off the ice and clear weather, to ſee whether there was any opening to the N. E. of the Head Land. By all the accounts from the Greenlandmen this year, and particularly the laſt account from the Rockingham, as well as from what we had ſeen ourſelves, the ice appeared to be quite cloſe to the N. W. We had ſeen it from E. S. E. to W. N. W. It was probable that the ſea, if open any where, would be ſo to the Eaſtward, where the Greenlandmen do not often venture, for fear of being prevented from returning by the ice joining to Spitſbergen. I determined therefore, ſhould the wind continue in the ſame quarter next day, to find whether the ice joined to the land, or was ſo detached as to afford me an opportunity of paſſing to the eaſtward. In caſe of the ice being faſt I could, with the wind Eaſterly, range cloſe along the edge of it to the weſtward. The weather exceedingly fine. At ſix in the afrernoon, the longitude by the watch was 9° 43′ 30″ E.

The ſeventh, at five in the morning the wind was northerly, and the weather remarkably clear. Being near the ice I ranged along it. It appeared to be cloſe all round; but I was in hopes that ſome opening might be found to get through to a clear ſea to the Northward. I ran in amongſt the ſmall ice, and kept as cloſe as poſſible to the main body, not to miſs any opening. At noon, Cloven Cliff W. half S. ſeven leagues. At one in the afternoon, being ſtill amongſt the looſe ice, I ſent the boat to one of the large pieces to fill water. At four we ſhoaled the water very ſuddenly to fourteen fathom: the outer part of Cloven Cliff bore W. half N.: Redcliff, S. quarter E. The looſe ice being open to the E. N. E., we hauled up, and immediately deepened our water to twenty-eight fathom; muddy ground, with ſhells. At half paſt four, the ice ſetting very cloſe, we ran between two pieces, and having little wind were ſtopped. The Carcaſs being very near, and not anſwering her helm well, was almoſt on board of us. After getting clear of her, we ran to the Eaſtward. Finding the pieces increaſe in number and ſize, and having got to a part leſs crowded with the drift ice, I brought to, at ſix in the evening, to ſee whether we could diſcover the leaſt appearance of an opening: but it being my own opinion, as well as that of the pilots and officers, that

we could go no farther, nor even remain there without danger of being beſet, I ſent the boat on board the Carcaſs for her pilots, to hear their opinion; they both declared that it appeared to them impracticable to proceed that way, and that it was probable we ſhould ſoon be beſet where we were, and detained there. The ice ſet ſo faſt down, that before they got on board the Carcaſs we were faſt. Captain Lutwidge hoiſted our boat up, to prevent her being ſtove. We were obliged to heave the ſhip through for two hours, with ice anchors, from each quarter; nor were we quite out of the ice till midnight. This is about the place where moſt of the old diſcoverers were ſtopped. The people in both ſhips being much fatigued, and the Carcaſs not able to keep up with us, without carrying ſtudding-ſails. I ſhortened ſail as ſoon as we were quite out, and left orders to ſtand to the northward under an eaſy ſail: I intended, having failed in this attempt, to range along the ice to the N. W., in hopes of an opening that way, the wind being fair, and the weather clear; reſolving, if I found it all ſolid, to return to the eaſtward, where probably it might by that time be broken up, which the very mild weather encouraged me to expect.

The eighth, little wind in the morning, and a ſwell ſetting on the ice, we were obliged to get the boats a-head, to tow the ſhip clear; which they effected with difficulty. A breeze ſpringing up when we were within two cables lengths of the main body of the ice, ſtood in for the land, and tacked at two, to ſtand to the N. W. for the ice; but the weather coming thick between five and ſix, I ſtood in again for the land. It clearing up ſoon after, I bore away again N. W. for the ice. At ten, ſpoke with a Greenland Ship which had juſt left the ice all cloſe to the N. N. W. Between eleven and twelve the wind came to the S. W., with an heavy ſwell, and thick weather. Double-reefed the topſails, and tacked at twelve, to ſtand in for Hacluyt's Head Land, not thinking it proper to run in with the faſt ice to leeward in thick weather, without even the probability of an opening; and propoſing, if that weather continued, to complete the ſhip's water, and be ready with the firſt wind, off or along the ice, to look out for an opening and run in. To avoid any inconvenience, which from the experience of the preceeding day I perceived might happen, from too many running to one place on any ſudden order, I divided the people into gangs under the midſhipmen, and ſtationed them to the ice hooks, poles, crabs, and to go over upon the ice when wanted.

The ninth, having a fair opportunity, and S. W. wind, ſtood to the weſtward; intending, when the weather was clear, to make the ice to the northward, and run along it. About twelve, clearer; ſaw the faſt ice to the northward, and the appearance of looſe ice to the N. W.: ſtood directly for it, and got amongſt it between two and three; ſteering as much to the northward as the ſituation of the ice would permit. At ſix obſerved the dip 88° 52′. At half paſt ſeven, found the ice quite faſt to the weſt, being in longitude 2° 2′ E., by our reckoning, which was the fartheſt to the weſtward of Spitſbergen that we got this voyage. At eight the fog was ſo very thick, that we could neither ſee which way to puſh for an opening, nor where the Carcaſs was, though very near us. That we might not riſk parting company with her, I was obliged to ply to windward under the topſails, tacking every quarter of an hour to keep in the opening in which we were, and clear of the ice which ſurrounded us. At four in the afternoon we were in 80° 36′.

The tenth, we loſt the Carcaſs twice in the night from the very thick fog, and were working all night amongſt the ice, making very ſhort tacks; the opening being ſmall, and the floating ice very thick about the ſhip. The ſituation of the people from the very fatiguing work and wet weather, made the moſt minute precaution neceſſary for the preſervation of their health: we now found the advantage of the ſpirits which had been allowed

allowed for extraordinary occaſions; as well as the additional cloathing furniſhed by the Admiralty. Notwithſtanding every attention, ſeveral of the men were confined with colds, which affected them with pains in their bones; but, from the careful attendance given them, few continued in the ſick liſt above two days at a time. At nine in the morning, when it cleared a little, we ſaw the Carcaſs much to the ſouthward of us. I took the opportunity of the clear weather to run to the weſtward, and found the ice quite ſolid there; I then ſtood through every opening to the northward, but there alſo ſoon got to the edge of the ſolid ice. I was forced to haul up to weather a point which ran out from it. After I had weathered that, the ice cloſing faſt upon me, obliged me to ſet the foreſail, which, with the freſh wind and ſmooth water, gave the ſhip ſuch way as to force through it with a violent ſtroke. At one in the afternoon, immediately on getting out into the open ſea, we found a heavy ſwell ſetting to the northward; though amongſt the ice, the minute before, the water had been as ſmooth as a mill-pond. The wind blew ſtrong at S. S. W. The ice, as far as we could ſee from the maſt head, lay E. N. E.: we ſteered that courſe cloſe to it, to look for an opening to the northward. I now began to conceive that the ice was one compact impenetrable body, having run along it from eaſt to weſt above 10°. I purpoſed however to ſtand over to the eaſtward, in order to aſcertain whether the body of ice joined to Spitſbergen. This the quantity of looſe ice had before rendered impracticable; but thinking the weſterly winds might probably by this time have packed it all that way, I flattered myſelf with the hopes of meeting with no obſtruction till I ſhould come to where it joined the land; and in caſe of an opening, however ſmall, I was determined at all events to puſh through it. The weather clearer, and the land in ſight.

The eleventh, at half paſt four in the morning the longitude by the lunar obſervation was 9° 42′ E. And at the ſame time by my watch 9° 2′ E. Cloven Cliff S. S. E. diſtant eight miles. This would make the longitude of Cloven Cliff 9° 38′ E.; which is within twenty minutes of what it was determined by the obſervations and ſurvey taken in Fair Haven. At noon the latitude obſerved was 80° 4′; Vogel Sang W. S. W. Little wind and a great ſwell in the morning. Calm moſt part of the day.

The twelfth, calm all day, with a great ſwell from the S. W., and the weather remarkably mild. At eight in the evening longitude by the watch 10° 54′ 30″ E.: Cloven Cliff S. W. by S. The Carcaſs drove with the current ſo near the main body of the ice, as to be obliged to anchor; ſhe came to in twenty-ſix fathom water.

The thirteenth, calm till noon, the ſhip driving to the weſtward with the current, which we obſerved to be very irregular, the Carcaſs being driven at the ſame time to the eaſtward. Near the main body of the ice, the detached pieces probably affect the currents, and occaſion the great irregularity which we remarked. We had found an heavy ſwell from the S. W. theſe two days. At two in the afternoon it came on very ſuddenly to blow freſh from that quarter, with foggy weather: we worked into Vogel Sang, and anchored with the beſt bower in eleven fathom, ſoft clay.

The place where we anchored is a good road-ſtead, open from the N. E. to the N. W. The north-eaſternmoſt point is the Cloven cliff, a bare rock ſo called from the top of it reſembling a cloven hoof, which appearance it has always worn, having been named by ſome of the firſt Dutch navigators who frequented theſe ſeas. This rock being entirely detached from the other mountains, and joined to the reſt of the iſland by a low narrow iſthmus, preſerves in all ſituations the ſame form; and being nearly perpendicular, it is never diſguiſed by ſnow. Theſe circumſtances render it one of the moſt remarkable points on the coaſt. The north-weſternmoſt land is an high bluff point, called by the

the Dutch, Vogel Sang. This ſound, though open to the northward, is not liable to any inconvenience from that circumſtance, the main body of the ice lying ſo near as to prevent any great ſea; nor are ſhips in any danger from the looſe ice ſetting in, as this road communicates with ſeveral others formed by different iſlands, between all which there are ſafe paſſages. To all the ſounds and harbours formed by this knot of iſlands, the old Engliſh navigators had given the general name of Fair Haven; of which Fotherby took a plat in 1614: that in which the Racehorſe and Carcaſs lay at this time they called the North Harbour; the harbour of Smeerenberg, diſtant about eleven miles (in which we anchored in Auguſt), they named the South Harbour. Beſides theſe, there are ſeveral others; particularly two, called Cook's Hole and the Norways, in both which ſeveral Dutch ſhips were lying at this time. Here the ſhore being ſteep-to, we completed our water with great eaſe, from the ſtreams which fall in many places down the ſides of the rocks, and are produced by the melting of the ſnow. I fixed upon a ſmall flat iſland, or rock, about three miles from the ſhip, and almoſt in the center of thoſe iſlands which form the many good roads here, as the propereſt place for erecting a tent, and making obſervations. The foggy weather on the fourteenth prevented us from uſing the inſtruments that day. I regretted this circumſtance much, fearing it would deprive me of the only probable opportunity of making obſervations on ſhore in thoſe high latitudes, as our water was nearly recruited: however, having little wind, with the weather very fair from the fifteenth to the eighteenth in the morning, I made the beſt uſe of that time. Even in the cleareſt weather here, the ſky was never free from clouds, which prevented our ſeeing the moon during the whole of our ſtay, or even being ſure of our ſolar obſervations, Mr. Lyons never having been able to get equal altitudes for ſettling the rates of going of the time-keepers. Once indeed we were fortunate enough to obſerve a revolution of the ſun, of which I availed myſelf to determine the going of the pendulum adjuſted to vibrate ſeconds at London. During the courſe of this experiment, a particular and conſtant attention was paid to the ſtate of the thermometer, which I was ſurpriſed to find differ ſo little about noon and midnight; its greateſt height was 58° and a half, at eleven in the forenoon; at midnight it was 51°.

On the ſixteenth, at noon, the weather was remarkably fine and clear. The thermometer in the ſhade being at 49°, when expoſed to the ſun roſe in a few minutes to 89° and a half, and remained ſo for ſome time, till a ſmall breeze ſpringing up, made it fall 10° almoſt inſtantly. The weather at this time was rather hot; ſo that I imagine, if a thermometer was to be graduated according to the feelings of people in theſe latitudes, the point of temperature would be about the forty-fourth degree of Fahrenheit's ſcale. From this iſland I took a ſurvey, to aſcertain the ſituation of all the points and openings, and the height of the moſt remarkable mountains: the longeſt baſe the iſland would afford was only ſix hundred and eighteen feet, which I determined by a croſs baſe, as well as actual meaſurement, and found the reſults not to differ above three feet. To try how far the accuracy of this ſurvey might be depended upon, I took in a boat, with a ſmall Hadley's ſextant, the angles between ſeven objects, which interſected exactly when laid down upon the plan. I had a farther proof of its accuracy ſome days after, by taking the bearings of Vogel Sang and Hacluyt's Head Land in one, which correſponded exactly with their poſition on my chart.

On the ſeventeenth, the weather being very clear, I went up one of the hills, from which I could ſee ſeveral leagues to the N. E.: the ice appeared uniform and compact, as far as my view extended. During our ſtay here, we found the latitude of the iſland on which the obſervations were made, to be 79° 50′; longitude 10° 2′ 30″ E.; variation 20° 38′ W.; dip 82° 7′: latitude of Cloven cliff 79° 53′; longitude 9° 59′ 30″ E.:

Hacluyt's

Hacluyt's Head Land 79° 47′; longitude 9° 11′ 30″ E. The tide roſe about four feet, and flowed at half an hour after one; full and change. The tide ſet irregularly, from the number of iſlands between which it paſſed; but the flood appeared to come from the ſouthward.

The eighteenth, the calm weather ſince the fourteenth had given us full time to finiſh the obſervations, and complete our water: a breeze ſpringing up in the morning, I went aſhore to get the inſtruments on board. Between one and two we weighed, with the wind weſterly, and ſtood to the northward. Between eleven and twelve at night, having run about eight leagues, we were prevented by the ice from getting farther. We ſtood along the edge of it to the ſouthward. At two in the morning, being embayed by the ice, I tacked, and left orders to ſtand to the eaſtward along the edge of the ice, as ſoon as we could weather the point; hoping, if there ſhould be no opening between the land and the ice, that I ſhould at leaſt be able to aſcertain where they joined, and perhaps to diſcover from the land, whether there was any proſpect of a paſſage that way: at that time the ice was all ſolid as far as we could ſee, without the leaſt appearance of water to the northward.

The nineteenth, at ſix in the morning, we had got to the eaſtward among the looſe ice which lay very thick in ſhore, the main body to the northward and eaſtward: the land near Deer Field not four miles off, and the water ſhoaled to twenty fathoms. Here we found ourſelves nearly in the ſame place where we had twice been ſtopped, the ice ſituated as before, locked with the land, without any paſſage either to the eaſtward or northward: I therefore ſtood back to the weſtward. At noon the northernmoſt part of Vogel Sang bore S. W. by S. diſtant about ſeven leagues. The weather being very fine, and the wind to the eaſtward, we were enabled to coaſt along the ice to the weſtward, hauling into all the bays, going round every point of ice in ſearch of an opening, and ſtanding cloſe along by the main body all day, generally within a ſhip's length.

The twentieth, at half after three in the morning, the land was out of ſight, and we imagined ourſelves in rather more than eighty degrees and a half; ſome of the openings being near two leagues deep, had flattered us with hopes of getting to the northward; but theſe openings proved to be no more than bays in the main body of the ice. About one in the afternoon, we were by our reckoning in about 80° 34′, nearly in the ſame place where we had been on the ninth. About three we bore away, for what appeared like an opening to the S. W.; we found the ice run far to the ſouthward.

The twenty-firſt, we ſtill continued to run along the edge of the ice, which trended to the ſouthward. At noon we were in the latitude of 79° 26′, by obſervation, which was twenty-five miles to the ſouthward of our reckoning. Finding that the direction of the ice led us to the ſouthward, and that the current ſet the ſame way, I ſtood to the northward and weſtward cloſe along the ice, to try whether the ſea was opened to the northward by the wind from that quarter. At nine in the evening we had no ground with two hundred fathom of line. At ten we got into a ſtream of looſe ice. The weather fine, but cool all day, and ſometimes foggy.

The twenty-ſecond, at two in the morning, we bore away to the N. E. for the main body of the ice; the weather became foggy ſoon afterwards. At ſix we ſaw the ice; and the weather being ſtill foggy, we hauled up to the S. S. E., to avoid being embayed in it: the air very cold.

The twenty-third, at midnight, tacked for the body of the ice. Latitude obſerved 80° 13′ 38″. Rainy in the morning; fair in the afternoon: ſtill working up to the northward and eaſtward, with the wind eaſterly. At ſix in the evening the Cloven cliff bearing ſouth about ſix leagues, ſounded in two hundred fathom, muddy ground; the lead appeared to have ſunk one-third of its length in the mud. At two in the morning,

ing, with little wind, and a ſwell from the ſouth-weſt, I ſtood to the northward amongſt the looſe ice: at half paſt two the main body of the ice a cable's length off, and the looſe ice ſo cloſe that we wore ſhip, not having way or room enough to tack; ſtruck very hard againſt the ice in getting the ſhip round, and got upon one piece, which lifted her in the water for near a minute, before her weight broke it. The ſhips had been ſo well ſtrengthened, that they received no damage from theſe ſtrokes; and I could with the more confidence puſh through the looſe ice, to try for openings. Hacluyt's Head Land bore S. 50° W., diſtant about ſeven leagues.

The twenty-fourth, by this ſituation of the ice we were diſappointed of getting directly to the northward, without any proſpect, after ſo many fruitleſs attempts, of being able to ſucceed to the weſtward; nor indeed could I, with an eaſterly wind and a heavy ſwell, attempt it, as the wind from that quarter would not only pack the looſe ice cloſe to the weſtward, but by ſetting the ſea on it, make it as improper to be approached as a rocky lee-ſhore. To the eaſtward, on the contrary, it would make ſmooth water, and detach all the looſe ice from the edges; perhaps break a ſtream open, and give us a fair trial to the northward; at all events, with an eaſterly wind we could run out again, if we did not find it practicable to proceed. Finding the ice ſo faſt to the northward and weſtward, it became a deſirable object to aſcertain how far it was poſſible to get to the eaſtward, and by that means purſue the voyage to the northward. Theſe conſiderations determined me to ply to the eaſtward, and make another puſh to get through where I had been three times repulſed. In working to the eaſtward, we kept as near the body of the ice as poſſible. At noon the Cloven cliff bore S. W. by S., about ſeven leagues. At ſix we were working to the N. E., and at nine we ſteered to the S. E., the ice appearing more open that way: we had freſh gales and cloudy weather. The ſhip ſtruck very hard in endeavouring to force through the looſe ice. At midnight the wind freſhened, and we double reefed the topſails. It was probably owing to the freſh gales this day, as well as to the ſummer being more advanced, that we were enabled to get farther than in any of our former attempts this way. We continued coaſting the ice, and at two in the morning the north part of Vogel Sang and Hacluyt's Head Land in one bore S. 65° W.; Cloven cliff S. 52° W.; the neareſt part of the ſhore about three leagues off. When I left the deck, at four in the morning, we were very near the ſpot where the ſhips had been faſt in the ice on the ſeventh in the evening, but rather farther to the eaſtward; we had paſſed over the ſame ſhoal water we had met with that day, and were now in twenty fathom, rocky ground; ſtill amongſt looſe ice, but not ſo cloſe as we had hitherto found it.

The twenty-fifth, at ſeven in the morning, we had deepened our water to fifty-five fathom, and were ſtill amongſt the looſe ice. At noon we had deepened our water to ſeventy fathom, with muddy bottom, at the diſtance of about three miles from the neareſt land. By two in the afternoon we had paſſed Deer Field, which we had ſo often before attempted without ſucceſs; and finding the ſea open to the N. E., had the moſt flattering proſpect of getting to the northward. From this part, all the way to the eaſtward, the coaſt wears a different face; the mountains, though high, are neither ſo ſteep or ſharp-pointed, nor of ſo black a colour as to the weſtward. It was probably owing to this remarkable difference in the appearance of the ſhore, that the old navigators gave to places hereabouts the names of Red Beach, Red Hill, and Red Cliff. One of them, ſpeaking of this part, has deſcribed the whole country in a few words: "Here (ſays he) I ſaw a more natural earth and clay than any that I have ſeen in all the country, but nothing growing thereupon more than in other places." At two in the afternoon we had little wind, and were in ſight of Moſſen iſland, which is very low and flat.

The Carcaſs being becalmed very near the iſland in the evening, Captain Lutwidge took that opportunity of obtaining the following exact account of its extent, which he communicated to me:

"At ten P. M., the body of Moſſen iſland bearing E. by S., diſtant two miles; ſounded thirteen fathoms, rocky ground, with light brown mud, and broken ſhells. Sent the maſter on ſhore, who found the iſland to be nearly of a round form, about two miles in diameter, with a lake or large pond of water in the middle, all frozen over, except thirty or forty yards round the edge of it, which was water, with looſe pieces of broken ice, and ſo ſhallow they walked through it, and went over upon the firm ſolid ice. The ground between the ſea and the pond is from half a cable's length to a quarter of a mile broad, and the whole iſland covered with gravel and ſmall ſtones, without the leaſt verdure or vegetation of any kind. They ſaw only one piece of drift wood (about three fathom long, with a root on it, and as thick as the Carcaſs's mizen-maſt) which had been thrown up over the high part of the land, and lay upon the declivity towards the pond. They ſaw three bears, and a number of wild ducks, geeſe, and other ſea-fowls, with birds' neſts all over the iſland. There was an inſcription over the grave of a Dutchman, who was buried there in July 1771. It was low water at eleven o'clock when the boat landed, and the tide appeared to flow eight or nine feet; at that time we found a current carrying the ſhip to the N. W. from the iſland, which before carried us to the S. E. (at the rate of a mile an hour) towards it. On the weſt ſide is a fine white ſandy bottom, from two fathoms, at a ſhip's length from the beach, to five fathoms, at half a mile's diſtance off."

The ſoundings all about this iſland, and to the eaſtward, ſeem to partake of the nature of the coaſt. To the weſtward the rocks were high, and the ſhores bold and ſteep too; here the land ſhelved more, and the ſoundings were ſhoal, from thirty to ten fathom. It appears extraordinary that none of the old navigators, who are ſo accurate and minute in their deſcriptions of the coaſt, have taken any notice of this iſland, ſo remarkable and different from every thing they had ſeen on the weſtern coaſt; unleſs we ſhould ſuppoſe that it did not then exiſt, and that the ſtreams from the great ocean up the weſt ſide of Spitſbergen, and through the Waygat's Straits, meeting here, have raiſed this bank, and occaſioned the quantity of ice that generally blocks up the coaſt hereabouts. At four in the afternoon hoiſted out the boat, and tried the current, which ſet N. E. by E., at the rate of three quarters of a mile an hour. At midnight Moſſen iſland bore from S. E. by S. to S. by W., diſtant about five miles.

The twenty-ſixth, about two in the morning, we had little wind, with fog; made the ſignals to the Carcaſs for keeping company. At half an hour after three in the afternoon, we were in longitude 12° 20′ 45″ E.; variation, by mean of five azimuths, 12° 47′ W. At nine we ſaw land to the eaſtward; ſteering to the northward with little wind, and no ice in ſight, except what we had paſſed.

The twenty-ſeventh, working ſtill to the N. E., we met with ſome looſe ice; however, from the openneſs of the ſea hitherto, ſince we had paſſed Deer Field, I had great hopes of getting far to the northward; but about noon, being in the latitude of eighty and forty-eight, by our reckoning, we were ſtopped by the main body of the ice, which we found lying in a line, nearly eaſt and weſt, quite ſolid. Having tacked, I brought to, and ſounded cloſe to the edge of the ice, in ſeventy-nine fathom, muddy bottom.

The wind being ſtill eaſterly, I worked up cloſe to the edge of the ice, coaſting it all the way. At ſix in the evening we were in longitude 14° 59′ 30″ E., by obſervation.

The twenty-eighth, at midnight, the latitude obſerved was 80° 37′. The main body of the ice ſtill lying in the ſame direction, we continued working to the eaſtward, and

found ſeveral openings to the northward, of two or three miles deep; into every one of which we ran, forcing the ſhip, wherever we could, by a preſs of ſail, amongſt the looſe ice which we found here in much larger pieces than to the weſtward. At ſix in the morning the variation, by the mean of ſix azimuths, was 11° 56′ W.; the horizon remarkably clear. At noon, being cloſe to the main body of the ice, the latitude by obſervation was 80° 36′: we ſounded in one hundred and one fathom, muddy ground. In the afternoon the wind blew freſh at N. E., with a thick fog; the ice hung much about the rigging. The looſe ice being thick and cloſe, we found ourſelves ſo much engaged in it, as to be obliged to run back a conſiderable diſtance to the weſtward and ſouthward, before we could extricate ourſelves: we afterwards had both the ſea and the weather clear, and worked up to the north-eaſtward. At half paſt five the longitude of the ſhip was 15° 16′ 45″ E. At ſeven the eaſternmoſt land bore E. half N., diſtant about ſeven or eight leagues, appearing like deep bays and iſlands, probably thoſe called in the Dutch charts the Seven Iſlands; they ſeemed to be ſurrounded with ice. I ſtood to the ſouthward, in hopes of getting to the ſouth-eaſtward round the ice, and between it and the land, where the water appeared more open.

The twenty-ninth, at midnight, the latitude by obſervation was 80° 21′. At four, tacked cloſe to the ice, hauled up the fore-ſail, and backed the mizen-top-ſail, having too much way amongſt the looſe ice. At noon, latitude obſerved 80° 24′ 56″. An opening, which we ſuppoſed to be the entrance of Waygat's Straits, bore ſouth; the northernmoſt land N. E. by E.; the neareſt ſhore diſtant about four miles. In the afternoon the officer from the deck came down to tell me, we were very near a ſmall rock even with the water's edge; on going up, I ſaw it within little more than a ſhip's length on the lee-bow, and put the helm down: before the ſhip got round we were cloſe to it, and perceived it to be a very ſmall piece of ice, covered with gravel. In the evening, ſeeing the northern part of the iſlands only over the ice, I was axious to get round it, in hopes of finding an opening under the land. Being near a low flat iſland oppoſite the Waygat's Straits, not higher, but much larger than Moſſen iſland, we had an heavy ſwell from the ſouthward, with little wind, and from ten to twenty fathom: having got paſt this iſland, approaching to the high land to the eaſtward, we deepened our water very ſuddenly to one hundred and ſeventeen fathom. Having little wind, and the weather very clear, two of the officers went with a boat in purſuit of ſome ſea-horſes, and afterwards to the low iſland. At midnight we found by obſervation the latitude 80° 27′ 3″, and the dip 82° 2′ 30″. At four in the morning I found, by Bouguer's log, that the current ſet two fathom to the eaſtward. At ſix in the morning the officers returned from the iſland; in their way back they had fired at and wounded a ſea-horſe, which dived immediately, and brought up with it a number of others. They all joined in an attack upon the boat, wreſted an oar from one of the men, and were with difficulty prevented from ſtaving or overſetting her; but a boat from the Carcaſs joining ours they diſperſed. One of that ſhip's boats had before been attacked in the ſame manner off Moſſen iſland. From Dr. Irving, who went on this party, I had the following account of the low iſland.

"We found ſeveral large fir-trees lying on the ſhore, ſixteen or eighteen feet above the level of the ſea; ſome of theſe trees were ſeventy feet long, and had been torn up by the roots; others cut down by the axe, and notched for twelve-feet lengths: this timber was no ways decayed, or the ſtrokes of the hatchet in the leaſt effaced. There were likewiſe ſome pipe-ſtaves, and wood faſhioned for uſe. The beach was formed of old timber, ſand, and whale-bones.

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"The iſland is about ſeven miles long, flat, and formed chiefly of ſtones from eighteen to thirty inches over, many of them hexagons, and commodiouſly placed for walking on: the middle of the iſland is covered with moſs, ſcurvy-graſs, ſorrel, and a few ranunculuſes then in flower. Two rein-deer were feeding on the moſs; one we killed, and found it fat, and of high flavour. We ſaw a light grey-coloured fox; and a creature ſomewhat larger than a weaſel, with ſhort ears, long tail, and ſkin ſpotted white and black. The iſland abounds with ſmall ſnipes, ſimilar to the jack-ſnipe in England. The ducks were now hatching their eggs, and many wild geeſe feeding by the water-ſide."

When I left the deck at ſix in the morning, the weather was remarkably clear, and quite calm. To the N. E., amongſt the iſlands, I ſaw much ice, but alſo much water between the pieces; which gave me hopes that when a breeze ſprung up, I ſhould be able to get to the northward by that way.

The thirtieth, little winds, and calm all day; we got ſomething to the northward and eaſtward. At noon we were by obſervation in latitude 80° 31′. At three in the afternoon we were in longitude 18° 48′ E., being amongſt the iſlands, and in the ice, with no appearance of an opening for the ſhip. Between eleven and twelve at night I ſent the maſter, Mr. Crane, in the four-oared boat, amongſt the ice, to try whether he could get the boat through, and find any opening for the ſhip which might give us a proſpect of getting farther; with directions if he could reach the ſhore to go up one of the mountains, in order to diſcover the ſtate of the ice to the eaſtward and northward. At five in the morning, the ice being all round us, we got out our ice-anchors, and moored along-ſide a field. The maſter returned between ſeven and eight, and with him Captain Lutwidge, who had joined him on ſhore. They had aſcended an high mountain, from whence they commanded a proſpect extending to the eaſt and north-eaſt ten or twelve leagues, over one continued plain of ſmooth unbroken ice, bounded only by the horizon: they alſo ſaw land ſtretching to the S. E., laid down in the Dutch charts as iſlands. The main body of the ice, which we had traced from weſt to eaſt, they now perceived to join to theſe iſlands, and from them to what is called the North-Eaſt-Land. In returning, the ice having cloſed much ſince they went, they were frequently forced to haul the boat over it to other openings. The weather exceedingly fine and mild, and unuſually clear. The ſcene was beautiful and pictureſque; the two ſhips becalmed in a large bay, with three apparent openings between the iſlands which formed it, but every where ſurrounded with ice as far as we could ſee, with ſome ſtreams of water; not a breath of air; the water perfectly ſmooth; the ice covered with ſnow, low and even, except a few broken pieces near the edges: the pools of water in the middle of the pieces were frozen over with young ice.

The thirty-firſt, at nine in the morning, having a light breeze to the eaſtward, we caſt off, and endeavoured to force through the ice. At noon the ice was ſo cloſe, that being unable to proceed, we moored again to a field. In the afternoon we filled our caſk with freſh water from the ice, which we found very pure and ſoft. The Carcaſs moved, and made faſt to the ſame field with us. The ice meaſured eight yards ten inches in thickneſs at one end, and ſeven yards eleven inches at the other. At four in the afternoon the variation was 12° 24′ W.: at the ſame time the longitude 19° 0′ 15″ E.; by which we found that we had hardly moved to the eaſtward ſince the day before. Calm moſt part of the day; the weather very fine; the ice cloſed faſt, and was all round the ſhips; no opening to be ſeen any where, except an hole of about a mile and a half, where the ſhips lay faſt to the ice with ice-anchors. We completed the water.

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The ſhip's company were playing on the ice all day. The pilots being much farther than they had ever been, and the ſeaſon advancing, ſeemed alarmed at being beſet.

The firſt of Auguſt, the ice preſſed in faſt; there was not now the ſmalleſt opening; the two ſhips were within leſs than two lengths of each other, ſeparated by ice, and neither having room to turn. The ice, which had been all flat the day before, and almoſt level with the water's edge, was now in many places forced higher than the main-yard, by the pieces ſqueezing together. Our latitude this day at noon, by the double altitude, was 80° 37′.

The ſecond, thick foggy wet weather, blowing freſh to the weſtward; the ice immediately about the ſhips rather looſer than the day before, but yet hourly ſetting in ſo faſt upon us, that there ſeemed to be no probability of getting the ſhips out again without a ſtrong eaſt or north-eaſt wind. There was not the ſmalleſt appearance of open water, except a little towards the weſt point of the north-eaſt land. The ſeven iſlands and north-eaſt land, with the frozen ſea, formed almoſt a baſon, leaving but about four points opening for the ice to drift out, in caſe of a change of wind.

The third, the weather very fine, clear, and calm; we perceived that the ſhips had been driven far to the eaſtward; the ice was much cloſer than before, and the paſſage by which we had come in from the weſtward cloſed up, no open water being in ſight, either in that or any other quarter. The pilots having expreſſed a wiſh to get if poſſible farther out, the ſhips' companies were ſet to work at five in the morning, to cut a paſſage through the ice, and warp through the ſmall openings to the weſtward. We found the ice very deep, having ſawed ſometimes through pieces twelve feet thick. This labour was continued the whole day, but without any ſucceſs; our utmoſt efforts not having moved the ſhips above three hundred yards to the weſtward through the ice, at the ſame time that they had been driven (together with the ice itſelf, to which they were faſt) far to the N. E. and eaſtward by the current; which had alſo forced the looſe ice from the weſtward between the iſlands, where it became packed, and as firm as the main body.

The fourth, quite calm till evening, when we were flattered with a light air to the eaſtward, which did not laſt long, and had no favourable effect. The wind was now at N. W., with a very thick fog, the ſhip driving to the eaſtward. The pilots ſeemed to apprehend that the ice extended very far to the ſouthward and weſtward.

The fifth, the probability of getting the ſhips out appearing every hour leſs, and the ſeaſon being already far advanced, ſome ſpeedy reſolution became neceſſary as to the ſteps to be taken for the preſervation of the people. As the ſituation of the ſhips prevented us from ſeeing the ſtate of the ice to the weſtward, by which our future proceedings muſt in a great meaſure be determined, I ſent Mr. Walden, one of the midſhipmen, with two pilots, to an iſland about twelve miles off, which I have diſtinguiſhed in the charts by the name of Walden's Iſland, to ſee where the open water lay.

The ſixth, Mr. Walden and the pilots, who were ſent the day before to examine the ſtate of the ice from the iſland, returned this morning with an account, that the ice, though cloſe all about us, was open to the weſtward, round the point by which we came in. They alſo told me, that when upon the iſland they had the wind very freſh to the eaſtward, though where the ſhips lay it had been almoſt calm all day. This circumſtance conſiderably leſſened the hopes we had hitherto entertained of the immediate effect of an eaſterly wind in clearing the bay. We had but one alternative; either patiently to wait the event of the weather upon the ſhips, in hopes of getting them out, or to betake ourſelves to the boats. The ſhips had driven into ſhoal water, having but

fourteen

fourteen fathoms. Should they, or the ice to which they were faſt, take the ground, they muſt be inevitably loſt, and probably overſet. The hopes of getting the ſhips out was not haſtily to be relinquiſhed, nor obſtinately adhered to, till all other means of retreat were cut off. Having no harbour to lodge them in, it would be impoſſible to winter them here, with any probability of their being again ſerviceable; our proviſions would be very ſhort for ſuch an undertaking, were it otherwiſe feaſible; and ſuppoſing what appeared impoſſible, that we could get to the neareſt rocks, and make ſome conveniences for wintering, being now in an unfrequented part, where ſhips never even attempt to come, we ſhould have the ſame difficulties to encounter the next year, without the ſame reſources; the remains of the ſhip's company, in all probability, not in health: no proviſions; and the ſea not ſo open, this year having certainly been uncommonly clear. Indeed it could not have been expected that more than a very ſmall part ſhould ſurvive the hardſhips of ſuch a winter with every advantage; much leſs in our preſent ſituation. On the other hand, the undertaking to move ſo large a body for ſo conſiderable a diſtance by boats, was not without very ſerious difficulties. Should we remain much longer here, the bad weather muſt be expected to ſet in. The ſtay of the Dutchmen to the northward is very doubtful: if the northern harbours keep clear, they ſtay till the beginning of September; but when the looſe ice ſets in, they quit them immediately. I thought it proper to ſend for the officers of both ſhips, and informed them of my intention of preparing the boats for going away. I immediately hoiſted out the boats, and took every precaution in my power to make them ſecure and comfortable: the fitting would neceſſarily take up ſome days. The water ſhoaling, and the ſhips driving faſt towards the rocks to the N. E., I ordered canvaſs bread-bags to be made, in caſe it ſhould be neceſſary very ſuddenly to betake ourſelves to the boats: I alſo ſent a man with a lead and line to the northward, and another from the Carcaſs to the eaſtward, to ſound wherever they found cracks in the ice, that we might have notice before either the ſhips, or the ice to which they were faſt, took the ground; as in that caſe, they muſt inſtantly have been cruſhed or overſet. The weather bad; moſt part of the day foggy, and rather cold.

The ſeventh, in the morning, I ſet out with the launch over the ice; ſhe hauled much eaſier than I could have expected; we got her about two miles. I then returned with the people for their dinner. Finding the ice rather more open near the ſhips, I was encouraged to attempt moving them. The wind being eaſterly, though but little of it, we ſet the ſails, and got the ſhips about a mile to the weſtward. They moved indeed, but very ſlowly, and were not now by a great deal ſo far to the weſtward as where they were beſet. However, I kept all the ſail upon them, to force through whenever the ice ſlacked the leaſt. The people behaved very well in hauling the boat; they ſeemed reconciled to the idea of quitting the ſhips, and to have the fulleſt confidence in their officers. The boats could not with the greateſt diligence be got to the water-ſide before the fourteenth; if the ſituation of the ſhips did not alter by that time, I ſhould not be juſtified in ſtaying longer by them. In the mean time I reſolved to carry on both attempts together, moving the boats conſtantly, but without omiting any opportunity of getting the ſhips through.

The eighth, at half paſt four, ſent two pilots with three men to ſee the ſtate of the ice to the weſtward, that I might judge of the probability of getting the ſhips out. At nine they returned, and reported the ice to be very heavy and cloſe, conſiſting chiefly of large fields. Between nine and ten this morning, I ſet out with the people, and got the launch above three miles. The weather being foggy, and the people having worked hard, I thought it beſt to return on board between ſix and ſeven. The ſhips had

had in the mean time moved ſomething through the ice, and the ice itſelf had driſted ſtill more to the weſtward. At night there was little wind, and a thick fog, ſo that I could not judge preciſely of the advantage we had gained; but I ſtill feared that, however flattering, it was not ſuch as to juſtify my giving up the idea of moving the boats, the ſeaſon advancing ſo faſt, the preſervation of the ſhips being ſo uncertain, and the ſituation of the people ſo critical.

The ninth, a thick fog in the morning: we moved the ſhip a little through ſome very ſmall openings. In the afternoon, upon its clearing up, we were agreeably ſurpriſed to find the ſhips had driven much more than we could have expected to the weſtward. We worked hard all day, and got them ſomething more to the weſtward through the ice; but nothing in compariſon to what the ice itſelf had drifted. We got paſt the launches; I ſent a number of men for them, and got them on board. Between three and four in the morning the wind was weſterly, and it ſnowed faſt. The people having been much fatigued, we were obliged to deſiſt from working for a few hours. The progreſs which the ſhips had made through the ice was, however, a very favourable event: the drift of the ice was an advantage that might be as ſuddenly loſt, as it had been unexpectedly gained, by a change in the current: we had experienced the inefficacy of an eaſterly wind when far in the bay, and under the high land; but having now got through ſo much of the ice, we began again to conceive hopes that a briſk gale from that quarter would ſoon effectually clear us.

The tenth, the wind ſpringing up to the N. N. E. in the morning, we ſet all the ſail we could upon the ſhip, and forced her through a great deal of very heavy ice: ſhe ſtruck often very hard, and with one ſtroke broke the ſhank of the beſt bower anchor. About noon we had got her through all the ice, and out to ſea. I ſtood to the N. W. to make the ice, and found the main body juſt where we left it. At three in the morning, with a good breeze eaſterly, we were ſtanding to the weſtward, between the land and the ice, both in ſight, the weather hazy.

The eleventh, came to an anchor in the harbour of Smeerenberg, to refreſh the people after their fatigues. We found here four of the Dutch ſhips, which we had left in the Norways when we ſailed from Vogel Sang, and upon which I had depended for carrying the people home in caſe we had been obliged to quit the ſhips. In this ſound there is good anchorage in thirteen fathom, ſandy bottom, not far from the ſhore: it is well ſheltered from all winds. The iſland cloſe to which we lay is called Amſterdam Iſland, the Weſternmoſt point of which is Hackluyt's Head Land: here the Dutch uſed formerly to boil their whale-oil, and the remains of ſome conveniencies erected by them for that purpoſe are ſtill viſible. Once they attempted to make an eſtabliſhment, and left ſome people to winter here, who all periſhed. The Dutch ſhips ſtill reſort to this place for the latter ſeaſon of the whale fiſhery.

The twelfth, got the inſtruments on ſhore, and the tent pitched; but could not make any obſervations this day or the next, from the badneſs of the weather.

The thirteenth, rain, and blowing hard: two of the Dutch ſhips ſailed for Holland.

The fourteenth, the weather being fine and little wind, we began our obſervations.

The eighteenth, completed the obſervations. Calm all the day. During our ſtay, I again ſet up the pendulum, but was not ſo fortunate as before, never having been able to get an obſervation of a revolution of the ſun, or even equal altitudes for the time. We had an opportunity of determining the refraction at midnight, which anſwered within a few ſeconds to the calculation in Dr. Bradley's table, allowing for the barometer and thermometer. Being within ſight of Cloven Cliff, I took a ſurvey of this part of Fair Haven, to connect it with the plan of the other part. Dr. Irving climbed up a moun-

tain, to take its height with the barometer, which I determined at the ſame time geometrically with great care. By repeated obſervations here we found the latitude to be 79° 44′, which by the ſurvey correſponded exactly with the latitude of Cloven Cliff, determined before; the longitude 9° 50′ 45″ E; dip 82° 8′ and three fourths; variation 18° 57′ W.; which agrees alſo with the obſervation made on ſhore in July. The tide flowed here half paſt one, the ſame as in Vogel Sang harbour.

Oppoſite to the place where the inſtruments ſtood, was one of the moſt remarkable icebergs in this country. Icebergs are large bodies of ice filling the vallies between the high mountains; the face towards the ſea is nearly perpendicular, and of a very lively light green colour. That repreſented in the engraving, from a ſketch by Mr. D'Auvergne upon the ſpot, was about three hundred feet high, with a caſcade of water iſſuing out of it. The black mountains, white ſnow, and beautiful colour of the ice, make a very romantic and uncommon picture. Large pieces frequently break off from the icebergs, and fall with great noiſe into the water: we obſerved one piece which had floated out into the bay, and grounded in twenty-four fathom; it was fifty feet high above the ſurface of the water, and of the ſame beautiful colour as the iceberg.

A particular deſcription of all the plants and animals will have a place in the Appendix. I ſhall here mention ſuch general obſervations as my ſhort ſtay enabled me to make. The ſtone we found was chiefly a kind of marble, which diſſolved eaſily in the marine acid. We perceived no marks of minerals of any kind, nor the leaſt appearance of preſent, or remains of former, volcanoes. Neither did we meet with inſects, or any ſpecies of reptiles; not even the common earth-worm. We ſaw no ſprings or rivers, the water, which we found in great plenty, being all produced by the melting of the ſnow from the mountains. During the whole time we were in theſe latitudes, there was no thunder or lightning. I muſt alſo add, that I never found what is mentioned by Marten (who is generally accurate in his obſervations, and faithful in his account) of the ſun at midnight reſembling in appearance the moon; I ſaw no difference in clear weather between the ſun at midnight and any other time, but what aroſe from a different degree of altitude; the brightneſs of the light appearing there, as well as elſewhere, to depend upon the obliquity of his rays. The ſky was in general loaded with hard white clouds; ſo that I do not remember to have ever ſeen the ſun and the horizon both free from them even in the cleareſt weather. We could always perceive when we were approaching the ice, long before we ſaw it, by a bright appearance near the horizon, which the two pilots called the *blink of the ice*. Hudſon remarked, that the ſea where he met with ice was blue; but the green ſea was free from it. I was particularly attentive to obſerve this difference, but could never diſcern it.

The driftwood in theſe ſeas has given riſe to various opinions and conjectures, both as to its nature and the place of its growth. All that which we ſaw (except the pipe-ſtaves taken notice of by Dr. Irving on the low iſland) was fir, and not worm-eaten. The place of its growth I had no opportunity of aſcertaining.

The nature of the ice was a principal object of attention in this climate. We found always a great ſwell near the edge of it; but whenever we got within the looſe ice, the water was conſtantly ſmooth. The looſe fields and flaws, as well as the interior part of the fixed ice, were flat and low: with the wind blowing on the ice, the looſe parts were always, to uſe the phraſe of the Greenlandmen, packed; the ice at the edges appearing rough, and piled up; this roughneſs and height I imagine to proceed from the ſmaller pieces being thrown up by the force of the ſea on the ſolid part. During the

time that we were faſt amongſt the Seven iſlands, we had frequent opportunities of obſerving the irreſiſtible force of the large bodies of floating ice. We have often ſeen a piece of ſeveral acres ſquare lifted up between two much larger pieces, and as it were becoming one with them; and afterwards this piece ſo formed acting in the ſame manner upon a ſecond and a third; which would probably have continued to be the effect, till the whole bay had been ſo filled with ice that the different pieces could have had no motion, had not the ſtream taken an unexpected turn, and ſet the ice out of the bay.

The nineteenth, weighed in the morning with the wind at N. N. E. Before we got out of the bay it fell calm. I obſerved for theſe three or four days, about eleven in the evening, an appearance of duſk.

The twentieth, at midnight, being exactly in the latitude of Cloven cliff, Mr. Harvey took an obſervation for the refraction; which we found agreeable with the tables. The wind ſoutherly all day, blowing freſh in the afternoon. About noon fell in with a ſtream of looſe ice, and about four made the main ice near us. We ſtood to the W. N. W. along it at night, and found it in the ſame ſituation as when we ſaw it before; the wind freſhened and the weather grew thick, ſo that we loſt ſight of it, and could not venture to ſtand nearer, the wind being S. S. W.

The twenty-firſt, at two in the morning we were cloſe in with the body of the weſt ice, and obliged to tack for it; blowing freſh, with a very heavy ſea from the ſouthward. The wind abated in the afternoon, but the ſwell continued, with a thick fog.

The twenty-ſecond, the wind ſprung up northerly, with a thick fog; about noon moderate and clearer; but coming on to blow freſh again in the evening, with a great ſea, and thick fog, I was forced to haul more to the eaſtward, leſt we ſhould be embayed, or run upon lee ice.

The ſeaſon was ſo very far advanced, and fogs as well as gales of wind ſo much to be expected, that nothing more could now have been done, had any thing been left untried. The ſummer appears to have been uncommonly favourable for our purpoſe, and afforded us the fulleſt opportunity of aſcertaining repeatedly the ſituation of that wall of ice, extending for more than 20° between the latitudes of 80° and 81°, without the ſmalleſt appearance of any opening.

I ſhould here conclude the account of the voyage, had not ſome obſervations and experiments occurred on the paſſage home.

In ſteering to the ſouthward we ſoon found the weather grow more mild, or rather to our feelings warm. Auguſt the twenty-fourth we ſaw Jupiter: the ſight of a ſtar was now become almoſt as extraordinary a phenomenon, as the ſun at midnight when we firſt got within the Arctic circle. The weather was very fine for ſome part of the voyage; on the fourth of September, the water being perfectly ſmooth with a dead calm, I repeated with ſucceſs the attempt I had made to get ſoundings in the main ocean at great depths, and ſtruck ground in ſix hundred and eighty-three fathoms, with circumſtances (which will be mentioned in the Appendix) that convince me I was not miſtaken in the depth; the bottom was a fine ſoft blue clay. From the ſeventh of September, when we were off Shetland, till the twenty-fourth, when we made Orfordneſs, we had very hard gales of wind with little intermiſſion, which were conſtantly indicated ſeveral hours before they came on by the fall of the barometer, and riſe of the manometer: this proved to me the utility of thoſe inſtruments at ſea. In one of theſe gales, the hardeſt, I think, I ever was in, and with the greateſt ſea, we loſt three of our boats, and were obliged to heave two of our guns overboard, and bear away for ſome time, though near a lee-ſhore, to clear the ſhip of water. I cannot omit this opportunity of repeating, that I had the greateſt reaſon on this, as well as every other critical occaſion, to be ſatisfied with the behaviour

behaviour both of the officers and ſeamen. In one of theſe gales on the twelfth of September, Dr. Irving tried the temperature of the ſea in that ſtate of agitation, and found it conſiderably warmer than that of the atmoſphere. This obſervation is the more intereſting, as it agrees with a paſſage in Plutarch's Natural Queſtions, not (I believe) before taken notice of, or confirmed by experiment, in which he remarks, "that the ſea becomes warmer by being agitated in waves."

The frequent and very heavy gales at the latter end of the year, confirmed me in the opinion, that the time of our ſailing from England was the propereſt that could have been choſen. Theſe gales are as common in the ſpring as in autumn: there is every reaſon to ſuppoſe therefore, that at an early ſeaſon we ſhould have met with the ſame bad weather in going out as we did on our return. The unavoidable neceſſity of carrying a quantity of additional ſtores and proviſions, rendered the ſhips ſo deep in the water, that in heavy gales the boats, with many of the ſtores, muſt probably have been thrown overboard; as we experienced on our way home, though the ſhips were then much lightened by the conſumption of proviſions, and expenditure of ſtores. Such accidents in the outſet muſt have defeated the voyage. At the time we ſailed, added to the fine weather, we had the further advantage of nearly reaching the latitude of eighty without ſeeing ice, which the Greenlandmen generally fall in with in the latitude of ſeventy-three or ſeventy-four. There was alſo moſt probability, if ever navigation ſhould be practicable to the Pole, of finding the ſea open to the northward after the ſolſtice; the ſun having then exerted the full influence of his rays, though there was enough of the ſummer ſtill remaining for the purpoſe of exploring the ſeas to the northward and weſtward of Spitſbergen.

APPENDIX.—*Obſervations on different Methods of meaſuring a Ship's Way.*

THE degree of accuracy with which the diſtance run by a ſhip can be meaſured, is a thing of great importance, but unfortunately not eaſily to be aſcertained from the great variety of circumſtances which may occaſion errors in the reckoning, and which, though not depending upon the meaſure of the ſhip's way, may in voyages not nearly upon a meridian be confounded with thoſe that do. The circumſtances of the preſent voyage gave me the faireſt opportunity of trying this experiment, the weather being fine, and the courſe very nearly upon a meridian; ſo that an error of one point could not make more than the difference of one mile in fifty in the diſtance. When the difference of latitude is the ſame as the diſtance, it gives frequent opportunities of comparing the reckoning with the obſervation, and whatever error is found muſt be attributed to the imperfections in the manner of meaſuring the diſtance. Moſt of the writers on this ſubject have attributed the errors to a faulty diviſion of the log-line.

Before Norwood meaſured a degree, the length of a minute had been erroneouſly ſuppoſed five thouſand feet; in conſequence of which, the log-line, from the firſt uſe of that inſtrument about the year 1570, was invariably marked forty-two feet to thirty ſeconds. Norwood, when he publiſhed his Seaman's Practice, ſtated the true meaſure to be fifty-one feet to thirty ſeconds; but, as the ſhip would really run more than is given by the log, and it is right to have the reckoning ahead of the ſhip, he recommended marking the log-line fifty three feet to thirty ſeconds. It does not appear at what time an alteration either in the marking the log, or the length of the glaſs, took place in conſequence of theſe obſervations: Sir Jonas Moore in his Navigation which was publiſhed in the reign of Charles II. mentions, that the ſeamen, having found the old log not to anſwer, had ſhortened the glaſs to twenty-five ſeconds, which was equal to a line marked fifty

feet with a glaſs of thirty ſeconds; but he rather recommends reſtoring the half minute glaſs, and making the correction on the line. Since that time the ſeamen, whether from finding the allowance of one foot in fifty not a ſufficient compenſation for the accidental errors to which the log is ſubject, or from a preference of a meaſure nearly equal to the ſtatute mile, have uſed a line of forty-five feet to thirty ſeconds, or a glaſs of twenty-eight ſeconds to forty-two feet.

All the writers I have met with, who have treated of the log, except Wilſon, have complained of the ſeamen not having adhered to Norwood's meaſure. Norwood himſelf, however, ſeems to have been aware of the neceſſity of ſubmitting to the teſt of experiment the advantages of a new meaſurement derived from theory. In the preface to his Seaman's Practice he ſays, "Becauſe I am perſuaded we have at this day as many excellent navigators in this kingdom, and as great voyages performed, as from any other place in the world, I ſhould be glad to hear of the experimental reſolution of this problem by ſome of them, though it were but running eight or ten degrees near the meridian; for ſo I doubt not but what I have here written thereof would receive further confirmation and better entertainment than happily it will now, being ſo much different from the common opinion."

Had the errors in the diſtance ariſen only from a fault in marking the line, nothing would have been more eaſy than to have removed that difficulty by comparing carefully the different meaſures with the obſervations, and adhering to that which had been found to correſpond beſt with them. But the diſtance meaſured by the log being rendered uncertain by many accidental circumſtances, it becomes difficult, or rather impoſſible, to find any length of line which will ſhew invariably the diſtance run by the ſhip, or even to aſcertain with preciſion that meaſure which will at all times come neareſt the truth. Some of theſe circumſtances are:

1. The effects of currents.

2. The yawing of the ſhip going with the wind aft, or upon the quarter, when ſhe is ſeldom ſteered within a point each way: this I mention as an error in the diſtance, and not in the courſe; ſince, though the ſhip by being yawed equally each way may make the intended courſe good upon the whole, yet the diſtance will be ſhortened as the verſed ſine of the angle between the line intended and that ſteered upon.

3. By the ſhip being driven on by the ſwell, or the log during the time of heaving being thrown up nearer the ſhip.

4. By the log coming home, or being drawn after the ſhip, by the friction of the reel and the lightneſs of the log. Norwood mentions theſe two laſt, and ſays, "For theſe cauſes, it is like, there may ſometimes be allowed three or fathoms more than is veered out; but this, (as a thing mutable and uncertain) being ſometimes more, ſometimes leſs, cannot be brought to any certain rule, but ſuch allowance may be made as a man in his experience and diſcretion finds fit."

5. By the log being only a mean taken every hour, and conſequently liable to error from the variations in the force of the wind during the intervals, for which an arbitrary correction is made by the officer of the watch; and though men of ſkill and experience come near the truth, yet this allowace muſt, from its nature, be inaccurate.

Theſe circumſtances did not eſcape M. Bouguer's attention, and his ingenuity ſuggeſted to him an improvement of the common log, which would correct the errors likely to ariſe from the moſt material of theſe circumſtances: a deſcription of this improvement he publiſhed at large in the Memoirs of the Academy of Sciences for the year 1747; it has ſince been abridged in the edition of his Navigation by De la Caille. It appears extraordinary that this log ſhould never have been made uſe of by others;—

the great reputation of the author, as well as the very good reaſons he offers in favour of his improvement, were ſufficient inducements to me to try the experiment.

In the log which I made uſe of,

The length of the cone was	-	12 inches.
The diameter of the baſe	-	$5\frac{1}{10}$.
The weight of the cone	-	25 ounces.
The diagonal length of the diver	-	14 inches.
The length of each ſide	- -	$9\frac{3}{4}$.
The weight of the diver	- -	$26\frac{1}{2}$ ounces.

The length of line from the diver to the cone, 50 feet: the log line 51 feet to a knot.

Whether M. Bouguer's log will (as he expected) correct the errors ariſing from currents in the common log, I had no opportunity in diſcovering in this voyage.

The ſecond error, which no log will correct, cannot be attended with any bad effect, as it muſt make the reckoning, in whatever degree it takes place, ahead of the ſhip.

By obſerving M. Bouguer's rules in comparing it with the common log, which for that purpoſe muſt be reckoned at fifty-one feet, it will, I think, very fully correct the third and fourth, which are the moſt material errors; as the agitation of the ſea from winds does not exceed the depth to which the diver is let down, and the weight of the whole machine prevents the friction of the reel from having an effect in any degree equal to that which it has on the common log.

The fifth ariſes from the imperfection it has in common with the log generally uſed.

At firſt, on the paſſage out, I contented myſelf with heaving Bouguer's log occaſionally, to obſerve what precautions were neceſſary to be taken to prevent errors, as well as to find whether its variations from the common log were on the ſame ſide as the meridian obſervation required. I found that it was neceſſary to take care that the diver ſhould be of ſuch a weight as to let only the top of the cone ſwim; but not heavy enough to ſink it, as in that caſe it would be liable to an error in exceſs, by meaſuring the depth that the diver would ſink in addition to the ſhip's way. It was neceſſary to put a weight of lead to the bottom of the diver, to ſink it down to its place before the ſtray line was out. The line between the diver and the cone ſhould not be more than fifty feet, that being as great a depth as it will ſink to whilſt the ſtray line is running off the reel when the ſhip has much way through the water.

On the paſſage out, the longeſt period of my trying this log between two obſervations, was from the twenty-fifth to the thirtieth; in which time the ſhip had run four degrees, and the reckoning by Bouguer's log was eighteen miles aſtern of the ſhip: but as it appears that the ſhip on the twenty-ſixth, with the wind northerly, and making barely an eaſt courſe, was found by the obſervation to be twenty miles to the northward of her reckoning, that diſtance muſt be attributed to a current; therefore if that current had not taken place, Bouguer's log would have been, inſtead of eighteen miles aſtern, two miles ahead of the ſhip.

On the paſſage home it was tried from the latitude of eighty degrees eleven minutes, to ſixty-eight degrees eleven minutes; in which diſtance, though the ſhip was much yawed from the ſea being frequently upon the quarter, this log was only thirty-one miles ahead of the ſhip, which might be owing entirely to that circumſtance without any other cauſe.

The ſtate of the common log on the paſſage out, when the weather was remarkably fine, and water in general ſmooth, was, from the latitude of ſixty degrees thirty-ſeven minutes to ſeventy-eight degrees eight minutes, with the line marked fifty-one feet to thirty ſeconds, one degree fifty-eight minutes aſtern of the ſhip, with the line marked forty-

five

five feet to thirty ſeconds, four miles ahead of the ſhip. On the paſſage home, the log at fifty-one feet to thirty ſeconds, thirty-five miles aſtern of the ſhip; at forty-five to thirty ſeconds, one degree ſeven minutes ahead of the ſhip. As far therefore as the experience of this voyage extends, it appears that the errors of the log marked forty-five feet are always on the ſafe ſide, and that thoſe of the longer marked line are always ſhort of the run; but that Bouguer's is much more accurate than either.

It is not to be expected that the obſervations of a ſingle voyage can be ſufficient to determine the merit of any inſtrument, particularly one of ſo much conſequence as the log. I thought it right, however, to give an account of the trial I made of the different methods, and of ſuch remarks as occurred to me.*

I alſo tried two perpetual logs; one invented by Mr. Ruſſell, the other by Foxon, both conſtructed upon this principle, that a ſpiral, in proceeding its own length in the direction of its axis through a reſiſting medium, makes one revolution round the axis; if therefore the revolutions of the ſpiral are regiſtered, the number of times it has gone its own length through the water will be known. In both theſe the motion of the ſpiral in the water is communicated to the clock-work within board, by means of a ſmall line, faſtened at one end to the ſpiral which tows it after the ſhip, and at the other to a ſpindle which ſets the clock-work in motion. That invented by Mr. Ruſſell has a half ſpiral of two threads, made of copper, and a ſmall dial with clock-work, to regiſter the number of turns of the ſpiral. Foxon's has a whole ſpiral of wood with one thread, and a larger piece of clock-work, with three dials, two of them to mark the diſtance, and the other divided into knots and fathoms, to ſhew the rate by the half-minute glaſs, for the convenience of comparing it with the log.

This log, like all others, is liable to the firſt error, as well as to the ſecond. The third it partakes of in a very ſmall degree, only affecting the reckoning by that quantity which the ſpiral is thrown towards the ſhip; whereas in the log the ſame circumſtance affects the whole rate for the hour. The fourth it is entirely free from, as well as the fifth. It will have the advantage of every other in ſmooth water and moderate weather, when it is neceſſary to ſtand on one courſe for any particular diſtance, eſpecially in the night, or a fog, as it meaſures exactly the diſtance run. It will alſo be very uſeful in finding the trim of a ſhip when alone; as well as in ſurveying a coaſt in a ſingle ſhip, or in meaſuring diſtances in a boat between headlands or ſhoals, when a baſe is not otherwiſe to be obtained; both which it will do with the greateſt accuracy in ſmooth water, with a large wind, and no tide or current. But notwithſtanding theſe advantages, which will make it very uſeful and worth having, I doubt much whether it might ever be ſubſtituted entirely in the room of the common log. Machines eaſily repaired or replaced have advantages at ſea, which ſhould not lightly be given up for others more ſpecious.

Obſervations on the Uſe of the Megameter in Marine Surveying.

THE greateſt difficulty in marine ſurveying is that of obtaining an accurate baſe, from the extremities of which the angles may be taken with preciſion, for aſcertaining the bearings and diſtance of headlands and ſhoals, when either want of time or other circumſtances make it impracticable to land and meaſure a baſe. The uſual way is, to eſtimate the diſtance by the log, and to take the angles by the compaſs. This method is liable to many errors, and affords no means of correcting or diſcovering them. The megameter, conſtructed upon the principles of the object-glaſs micrometer, deſcribed by M. de Charniere, and applied by him to find the longitude at ſea, I thought might be uſefully applied to marine ſurveying. That which I uſed was made by Ramſden, with

* The table and others are omitted, as only intereſting to nautical readers.

ſome improvements. The advantages I imagined might be derived from this inſtrument were, a more correct and expeditious manner of determining the poſition of coaſts, and the diſtance of ſhoals or the ſhip from headlands. This inſtrument being divided to ten ſeconds, an angle may be taken by it with great accuracy to five ſeconds. The height of a ſhip's maſt-head above the water being known, it is eaſy to find with this inſtrument, by a ſingle obſervation, the diſtance between two ſhips, and conſequently to determine a baſe. The angles being taken with an Hadley's quadrant from each of the ſhips, to the objects whoſe ſituations are deſigned to be aſcertained, the diſtance may be found, and conſequently their relative ſituations. If there is a megameter in each ſhip, the altitudes taken from both ſhips at one inſtant, and the angles of the different parts of the coaſt intended to be ſurveyed obſerved with an Hadley's quadrant at the ſame time, will give the ſituation with more accuracy and expedition than any method of ſurveying from ſhips hitherto practiſed; with the farther advantage of the certain means of detecting any error in the obſervation, ſo as to judge whether it is of ſufficient importance to be attended to. The only precautions neceſſary are; to make the obſervations at the ſame inſtant, to prevent their being affected by any alteration in the relative poſition of the ſhips, as a very ſmall one there would occaſion a conſiderable error in the diſtance; and to be careful in chuſing objects ſufficiently defined and remarkable. This method of ſurveying has the further advantage of giving the ſcale of a coaſt: ſeamen, though they judge very accurately of their diſtance from places upon coaſts well known to them, are very often miſtaken when they fall in with land they have never ſeen before; of which we had at firſt ſome inſtances in this voyage, the height of the mountains, before we knew the ſcale of the coaſt, making us always think ourſelves nearer the land than we really were. Where the coaſt is at all high, the megameter affords a very accurate and expeditious method of determining the height of all the points, when their diſtances are found; and thence, the heights being known, of aſcertaining immediately by a ſingle obſervation the ſituation of the ſhip, or the latitude of any point by the bearings, at the time of a meridian obſervation: the direction and rate of currents or tides may alſo be found in this manner with great accuracy. I made ſeveral obſervations during this voyage with the megameter, ſome of which I ſhall give as examples; they were ſufficient to prove to me the great accuracy that may be attained with this inſtrument after ſome practice. The utility of ſuch a method of obtaining a ſurvey on an enemy's or undeſcribed coaſt, as well as that of being able to prove the truth of charts by a ſingle obſervation, is obvious.

June the fifteenth, the ſhip being in latitude 60° 19′, longitude 0° 39′ W., Hangcliff bore S. 63° 00′ W.; variation, 23° W.

The altitude of the Carcaſs's maſt, by the megameter, was 35′ 48″; height of the maſt, 102,75 feet; hence the diſtance between the Racehorſe and Carcaſs was 9861 feet: angle between the Carcaſs and Hangcliff, 85° 48′; between the Racehorſe and Hangcliff, 87° 00′: from whence the difference of latitude was found 10′ S.; difference of longitude 17′ W.: therefore the latitude of Hangcliff is 60° 9′; longitude 0° 56′ W.

July the ſecond, to try how far the megameter could be depended upon, I obſerved the altitude of the Carcaſs's maſt 2° 23′ 48″; the angle between the main-yard and main-topſail-yard, 0° 44′ 26″; hence the diſtance between the main-yard and main-top-ſail came out 31,750 feet.

By meaſurement it was found 34,125 feet.

Difference 2,375 feet.

The

The diſtance between the two ſhips, deduced from the altitude of the maſt, was	2457 feet.
By the angle of the main and main topſail-yard, the diſtance between them being 34,125 feet,	2640 feet.
Difference	183 feet.

Which is not more than the ſhips might have changed their poſition in the time of reading off and ſetting down the firſt obſervation before taking the ſecond.

An error of ten ſeconds in the obſervation of the angle ſubtended by the maſt at this diſtance, would make an error of two feet and three quarters in the diſtance. At the diſtance of a nautical mile it would produce an error of ſixteen feet. At other diſtances the error decreaſes as the ſquares of the diſtances decreaſe; and at other heights it decreaſes as the heights decreaſe.

Whenever the diſtance of the object, whoſe angle is taken by the megameter, does not exceed that of the viſible horizon, the very ſmall portion of the earth's ſurface intercepted between the object and obſerver, may be conſidered as a plane, to which the object is perpendicular, and the diſtance may be concluded by reſolving the right-angled triangle, formed by the upright object, and lines drawn from the obſerver's ſtation to the top and bottom of it.

Obſervations on the Variation.

THE variation of the compaſs, always an intereſting object to navigators and philoſophers, became peculiarly ſo in this voyage from the near approach to the pole. Many of the theories that had been propoſed on this ſubject, were to be brought to the teſt of obſervation made in high latitudes, by which alone their fallacy or utility could be diſcovered. They of courſe engaged much of my attention, and gave me the fulleſt opportunity of experiencing, with regret, the many imperfections of what is called the Azimuth compaſs. This inſtrument, though ſufficiently accurate to enable us to obſerve the variations ſo as to ſteer the ſhip without any material error, with the precaution of always uſing the ſame compaſs by which they are taken, is far from being of ſuch a conſtruction as to give the variation with that degree of preciſion, which ſhould attend experiments on which a theory is to be founded, or by which it is to be tried. The obſervations taken in this voyage will fully evince this by their great variations from one another in very ſhort intervals of time; nor is this diſagreement of ſucceſſive obſervations peculiar to the higher latitudes, and to be imputed to a near approach to the pole, as I found it to take place even upon the Engliſh coaſt.

As to the obſervations themſelves, they were taken with the greateſt care, and the moſt ſcrupulous attention to remove every circumſtance which might be ſuppoſed to create an accidental error; the obſervations being taken ſometimes by different people with the ſame compaſs, in the ſame and different places; ſometimes with different compaſſes, changing the places and the obſervers repeatedly, to try whether there was error to be imputed to local attraction, or the different mode of obſervation by different perſons. I have ſince my return tried the compaſſes by a meridian as well as by taking azimuths, and find them ſo agree with one another, though the ſame compaſs ſometimes differs from itſelf a degree in ſucceſſive obſervations.

That every perſon may (as far as is poſſible without having been preſent at the time) be enabled to judge of the degree of accuracy to be expected in ſuch obſervations, as well

well as the degree of attention paid to thoſe made by us, I have ſet down every circumſtance that I thought material, giving every part of each obſervation, with each ſeparate reſult, and the mean of every ſet, with the weather at the time. Whenever I mention its blowing freſh, it was only comparatively with reſpect to the reſt of the voyage, no obſervation having been made in any weather which might not generally ſpeaking be called fine.

Having ſaid ſo much of the inaccuracy of the inſtrument, I muſt add, that I think ſome general and rather curious inferences may ſafely be drawn from theſe obſervations. One is, that the variation near the latitude of eighty, if it alters at all with time, does not alter in any degree as it does in theſe latitudes: the variation having been found by Poole in 1610 to be 22° 30′ W. in latitude 78° 37′; 18° 16′ W. in Croſs Road in latitude 79° 15′ N.; and 17° 00′ within the foreland in latitude 78° 24′. By Baffin in 1613, in Horne Sound, latitude 76° 55″, the variation from the meridian was 12° 14′ W.; but by his compaſs 17°: his compaſs "was touched 5 and a half eaſterly," that being the variation in London at that time: in Green Harbour, latitude, 77° 40′, he obſerved the variation 13° 11′ W. Fotherby in 1614, made the variation in Magdalena Bay, latitude 79° 34′ N. 25° 00′ W.; and in latitude 79° 8′, two points. Neither Poole nor Fotherby mention whether their variations are reckoned from the meridian, or whether their compaſſes, like Baffin's, were fitted to the variation at that time in London. If Fotherby's were taken with a compaſs in which a correction was made for the variation at London, his obſervation agrees exactly with thoſe made by me in Vogel Sang and Smeerenberg; and thoſe of Poole and Baffin differ ſo little from mine, that the difference need not be regarded. But the variation in London now differs from what it was at that time above twenty-ſix degrees.

The other inference is, that, in going to the eaſtward in the latitude of eighty, the weſterly variation decreaſes very conſiderably from a difference in the longitude.

Account of the Inſtruments made uſe of for keeping the Meteorological Journal.

THE marine barometer was made by Mr. Nairne, from whom I received the following deſcription:

"The bore of the upper part of the glaſs tube of this barometer, is about three tenths of an inch in diameter, and four inches long. To this is joined a glaſs tube, with a bore about one twentieth of an inch in diameter. The two glaſs tubes being joined together, form the tube of this barometer; and, being filled with mercury, and inverted into a ciſtern of the ſame, the mercury falls down in the tube till it is counterbalanced by the atmoſphere.

"In a common barometer, the motion of the mercury up and down in the tube is ſo great at ſea, that it is not poſſible to meaſure its perpendicular height; conſequently cannot ſhew any alteration in the weight of the atmoſphere: but in this marine barometer, that defect is remedied. The inſtrument is fixed in gimmals, and kept in a perpendicular poſition by a weight faſtened to the bottom of it.

"The perpendicular riſing or falling of the mercury is meaſured by diviſions, on a plate divided into inches and tenths, and by a vernier diviſion into hundredths of an inch, which is fixed to the ſide of the tube."

The Hygrometer I was favoured with by M. De Luc; and the following Account is a literal Tranſlation of that which he gave me in French.

THE part of M. De Luc's Hygrometer which is affected by the impreſſions of the moiſture of the air, is a hollow cylinder of ivory, two inches eight lines long, and internally

ternally two lines and a half in diameter. It is open only at one end; and the thickneſs of its ſides, for the length of two inches ſix lines from the bottom, is but three ſixteenths of a line. It is this thin part which does the office of an hygrometer; the remaining part of the cylinder towards its orifice, muſt be kept a little thicker, being deſtined for joining it to a tube of glaſs, thirteen or fourteen inches long. This junction is effected by means of a piece of braſs, and the whole is cemented together with gum lac.

M. De Luc's reaſon for chooſing ivory as the hygrometer, is, that this matter appeared to him more proper than any other for receiving the impreſſions of the moiſture of the air, without ſuffering thereby any eſſential change. The cylinder made of it becomes more capacious, in proportion as it grows moiſter. This is the fundamental principle of the inſtrument. M. De Luc has ſince found, that, upon letting this cylinder lie ſome time in water of an uniform temperature, it ſwells to a certain point, after which it dilates no further. This circumſtance furniſhed him with a *maximum* of humidity; and, conſequently, with one point of compariſon in the ſcale of the hygrometer; and this point he has fixed at the temperature of melting ice. For meaſuring the differences in the capacity of this ivory cylinder, and thereby diſcovering its different degrees of moiſture, M. De Luc makes uſe of quickſilver, with which he fills the cylinder, and a part of the communicating glaſs tube. The more capacious this cylinder is, or, which is the ſame, the moiſter it is, the lower does the mercury ſtand in the glaſs tube; and *vice verſâ*. Now M. De Luc has found, that the loweſt point to which it can ſink, is that where it ſtands when the ivory cylinder is ſoaked in melting ice: he therefore names this point *zero*, in the ſcale of his hygrometer; and, conſequently, the degrees of this ſcale are *degrees of dryneſs*, counted from below upwards, as the quickſilver riſes in the glaſs tube.

To give theſe degrees a determinate length, and thus render the hygrometers capable of being compared with each other, M. De Luc employs in conſtructing them ſuch glaſs tubes as have been previouſly prepared, by being made into thermometers, and filled with mercury, ſo as to aſcertain upon them the points of melting ice and boiling water, and to take exactly the diſtance between thoſe points by any ſcale at pleaſure. That done, the bulb of this preparatory thermometer muſt be broken, and the quickſilver it contains exactly weighed. It is by knowing the weight of this, together with the diſtance between the fixed points of the thermometer, that the ſcale of the hygrometer is determined. For inſtance, let the weight of the quickſilver be one ounce, and the diſtance between the two abovementioned points, one thouſand parts of a certain ſcale: then ſuppoſe that the quickſilver in the hygrometer, to which this tube is to be applied, weighs only half an ounce; this will give a fundamental line, conſiſting of five hundered parts of the ſame ſcale. The fundamental line thus found, is applied to the ſcale of the hygrometer, beginning at *zero*, and meaſuring it off about four times over, that the whole variation of the inſtrument may be comprehended. Each of thoſe ſpaces being afterwards divided into forty equal parts, gives ſuch degrees as M. De Luc has found moſt convenient. In general terms, the length of the fundamental line of the hygrometer, muſt be to the interval between the two fixed points of the preparatory thermometer, as the weight of the quickſilver in the hygrometer is to the weight of the quickſilver in that thermometer.

This proportion between the ſcale of the hygrometer and that of the preparatory thermometer, furniſhes an eaſy method of correcting in this inſtrument the effects of heat upon the mercury it contains.

It will eaſily be conceived, from the conſtruction of the ſcale of this hygrometer, that if its cylinder of ivory was ſuddenly changed into glaſs the inſtrument would become

come a true thermometer, in which the interval between the points, anſwering to melting ice and boiling water, would be divided into forty parts. If, therefore, a thermometer, with a ſcale ſimilarly divided into forty parts between the fixed points, be placed near the hygrometer, it will ſhew immediately the correction to be made on that inſtrument for its variation as a thermometer; with ſome reſtrictions however; of which M. De Luc has given an account in the paper he ſent to the Royal Society on the ſubject of this hygrometer.

That part of the frame of the inſtrument on which the ſcale is marked, is moveable; ſo that, before obſerving the points at which the mercury ſtands, it may be puſhed upwards or downwards, according as the thermometer has riſen or fallen with reſpect to the point of melting ice: and thus the indications of the hygrometer can at once be freed from the errors which would ariſe from the difference in the volume of the quickſilver, on account of the different degrees of heat.

Deſcription of the Manometer, conſtructed by Mr. Ramſden.

THE manometer uſed in this voyage was compoſed of a tube of a ſmall bore, with a ball at the end; the barometer being at 29,7, a ſmall quantity of quickſilver was pnt into the tube to take off the communication between the external air, and that confined in the ball and the part of the tube below this quickſilver. A ſcale is placed on the ſide of the tube, which marks the degrees of dilatation ariſing from the increaſe of heat in this ſtate of the weight of the air, and has the ſame graduation as that of Fahrenheit's thermometer, the point of freezing being marked 32. In this ſtate therefore it will ſhew the degrees of heat in the ſame manner as a thermometer. But if the air becomes lighter, the bubble incloſed in the ball, being leſs compreſſed, will dilate itſelf, and take up a ſpace as much larger, as the compreſſing force is leſs; therefore the changes ariſing from the increaſe of heat will be proportionably larger; and the inſtrument will ſhew the differences in the denſity of the air, ariſing from the changes in its weight and heat. Mr. Ramſden found, that a heat, equal to that of boiling water, increaſed the magnitude of the air from what it was at the freezing point $\frac{404}{1000}$ of the whole. From this it follows, that the ball and the part of the tube below the beginning of the ſcale is of a magnitude equal to almoſt 414 degrees of the ſcale.

If we have the height of both the manometer and thermometer, the height of the barometer may be thence deduced by this rule; as the height of the manometer increaſed by 414, is to the height of the thermometer increaſed by 414; ſo is 29,7, to the height of the barometer.

This inſtrument, though far from complete, having been conſtructed in a hurry for the purpoſe of a firſt experiment, and liable to ſome inaccuracies in the obſervations from not having the thermometer with which it was compared attached to it, ſeldom differed from the marine barometer $\frac{1}{100}$ of an inch. Should it be improved to that degree of accuracy of which it ſeems capable, it will be of great uſe in determining refractions for aſtronomical obſervations, as well as indicating an approaching gale of wind at ſea.

MISCELLANEOUS OBSERVATIONS.

Observations for determining the Refraction in high Latitudes.

JUNE the thirtieth, at midnight, the diſtance of the two oppoſite horizons, taken by me with Ramſden's ſextant, was 179° 54′; the height of the eye being ſixteen feet above the level of the ſea.

Auguſt the fifteenth, at midnight, by the aſtronomical quadrant, the altitude of

the ſun's upper limb	4°	16′	55″	lower limb	3°	46′	0″
Error of the quadrant	—	—	32		—	—	32
	4	16	23		3	45	28
Semidiameter	—	15	51		+	15	51
App. Alt. Sun's center	4	0	32		4	1	19
Co. Declin.	75	56	13		75	56	13
App. Lat.	79	56	45		79	57	32
True Lat.	79	44	3		79	44	3
Refraction		12	42			13	29
By Dr. Bradley's tables		11	18			12	27
Allowing for the therm.		11	53			13	2

Barometer, 29,6 Thermometer, 37°

Auguſt the twentieth, at midnight, the ſun's meridian altitude by Mr. Harvey, 2° 25′ 00″

Dip	—	3	49
	2	21	11
Semidiameter	+	15	52
Altitude of the Sun's center	2	37	3
Co. Declin.	77	31	26
App. Latitude	80	8	29
Refr. by the tables		16	44
True Latitude	79	51	45

Hakluyt's Head-land S. by E.
Cloven Cliff - - E. by S. ¼ S.
Variation - - - 19° 30′ S.

It may not be improper to mention here that Baffin, in 1613, made an obſervation of the refraction when the ſun was in the horizon, in latitude 78° 46′, which alſo agrees exactly with Dr. Bradley's tables. It may therefore be preſumed that the refractions in the higher latitudes follow the ſame law as in theſe.

Specific

Specific Gravity of Ice, tried by Dr. Irving.

A PIECE of the moſt denſe ice he could find, being immerſed in ſnow water, thermometer thirty-four degrees,—fourteen fifteenth parts ſunk under the ſurface of the water.

In brandy juſt proof it barely floated: in rectified ſpirits of wine it fell to the bottom at once, and diſſolved immediately.

September the fourth, at two in the afternoon, we ſounded with all the lines, above eight hundred fathoms. Some time before the laſt line was out, we perceived a ſlack, and that it did not run off near ſo quick as before. When we got the lines in again, the firſt coil came in very eaſily, and twenty fathoms of the next, after which it took a great ſtrain to move the lead; a mark was put on at the place where the weight was perceived, and the line meaſured, by which the depth was found to be ſix hundred and eighty-three fathoms. The lead weighed above one hundred and fifty pounds, and had ſunk as appeared by the line, near ten feet into the ground, which was a very fine blue ſoft clay. A bottle fitted properly by Dr. Irving (none of thoſe ſent out having given ſatisfaction) was let down, faſtened to the line, about two fathoms from the lead. A thermometer plunged into the water from the bottom ſtood at forty degrees:—in water from the ſurface at fifty-five degrees;—in the ſhade, the heat of the air was ſixty-ſix degrees.

Experiments to find the Temperature of the Water at different Depths, made with Lord Charles Cavendiſh's Thermometer.

Day of the Month.	Depth in Fathoms to which it was ſunk.	Temperature of the Water as ſhewn by the Inſtrument.	Correction for Compreſſion and unequal Expanſion of Spirits.	Temperature of the Sea at the greateſt Depth to which it was ſunk, corrected for Compaſſion and Expanſion.	Heat of the Air.
		°	°	°	°
June 20	780	15	11	26	48½
30 A. M.	118	30	1	31	40½
P. M.	115	33	0	33	44¾
Auguſt 31	673	22	10	32	59½

It appears from the experiment of the firſt of July, in which the Inſtrument was compared with Fahrenheit's Thermometer at different Heats, that the Experiment cannot be depended on to leſs than two or three Degrees, as the Reſults drawn from the different Compariſons would differ by about five degrees.

Experiments

Experiments to determine the Temperature of the Water at different Depths of the Sea, and Quantity of Salt it contains; made with the Bottle fitted by Dr. Irving. A Meaſure, containing 29 Ounces 59 Grains of pure Snow-water, was uſed as a Standard; Thermometer 59°, Barometer 30,0".

Day of the Month.	Weight of the Water.	Depth in Fathoms	Thermometer at the Surface.	Thermometer in Water from the Bottom.	Thermometer in the Air.	Weight of the Salt.	Latitude, &c.
			°	°	°		° ′
1773	Oz. Grs					Grs.	
June 1	29 404				59	393	51 31 Nore
9	30 2					500	54 8 Off Flamborough Head.
11		32	51	49	55		
12	29 440	Surface	50		50	490	60 Off Shetland.
	29 442	65		44		492	
26	29 462				36	496	74 At Sea.
July 3	29 454		40		44	500	78
19	29 369				44	476	80 Near the Ice.
Aug. 4	30 15	60	36	39	32	510	80 30 Under the Ice.
31	12 360	80	51		48	220	
Sept. 4	12 365	683	55	40	60½	192	75 At Sea.
	12 365					216	
7		56	57	50	60		60 14

Sea water taken up at the back of Yarmouth Sands, was in the following ratio to diſtilled water:

	oz.	dwts.	grs.	
Sea-water	21	16	13,7	Thermometer, 53°;
Diſtilled water	21	4	16	

which is, as 10192: 10477,7; or, as 1: 1,02803.

The quantity of dry ſalt produced from the above water, was 13 dwts. 15 grs.; it appears, therefore, that ſea-water contains more air than diſtilled water.

The reſults of the experiments made with Lord Charles Cavendiſh's thermometer, and thoſe with the bottle fitted by Dr. Irving, differ materially as to the temperature of the ſea at great depths; I ſhall give an account, therefore of the precautions uſed by Dr. Irving to prevent the temperature from being altered, as well as of the allowance made by Mr. Cavendiſh for compreſſion, as they communicated them to me.

The following is the account of the precautions taken by Dr. Irving to prevent the temperature of the water being changed in bringing up from the bottom:

"The bottle had a coating of wool, three inches thick, which was wrapped up in an oiled ſkin, and let into a leather purſe, and the whole incloſed in a well-pitched canvaſs-bag, firmly tied to the mouth of the bottle, ſo that not a drop of water could penetrate to its ſurface. A bit of lead ſhaped like a cone, with its baſe downwards and a cord fixed to its ſmall end, was put into the bottle; and a piece of valve leather, with half a dozen ſlips of thin bladder, were ſtrung on the cord, which, when pulled, effectually corked the bottle in the inſide."

The following is Mr. Cavendish's account of the corrections to be made for Lord Charles Cavendish's thermometer:

"The thermometer used in these experiments is fully described in the Philosophical Transactions, Vol. L. p. 308; so that I imagine it is unnecessary to mention it here. But since the publication of that volume, the late Mr. Canton discovered that spirits of wine and other fluids are compressible; which must make the thermometer appear to have been colder than it really was, and renders a correction necessary on that account. There is another smaller correction necessary, owing to the expansion of spirits of wine by any given number of degrees of Fahrenheit's thermometer being greater in the higher degrees than the lower. As the method of computing these two corrections is not explained in that paper, it may be proper just to mention the rule which was made use of in doing it.

"In adjusting the degrees on the scale of this thermometer, the tube was entirely full of mercury, or the mercury stood at no degrees on the scale, when its real heat was 65° of Fahrenheit. Let the bulk of the mercury contained at that time in the cylinder be called M, and that of the spirits S; let the expansion of spirits of wine by 1° of Fahrenheit, about the heat of 65°, be to its whole bulk at that heat, as s to 1; and let its expansion by one degree at any other heat, as 65°—x, be to its bulk at 65°, as $s \times \overline{1 - dx}$ to 1; let the expansion of mercury by one degree of heat be to its bulk at 65°, as m to 1; and let $\frac{Ss + Mm}{Ss}$ be called G; let the compression of spirits of wine by the pressure of an hundred fathom of sea-water, when the heat of the spirits is nearly the same as that of the sea at the depth to which the thermometer was let down, be to its bulk at 65°, as C to 1; the compression of the mercury is so small that it may be neglected; let the thermometer be let down N hundred fathom, and when brought up and put into water of 65°—F degrees of heat let the mercury in the tube stand at E degrees; consequently the heat, as shewn by the thermometer, is 65°—F—E: and let the real heat of the sea at the depth to which it was sunk be 65—x degrees; then $65° - x = 65° - F - E + \frac{CN}{sG} - \frac{E d \times \overline{E + F + x}}{2G} + \frac{CN d \times \overline{F + x}}{2sG^2}$. In this thermometer $S = 1160$; $M = 97$; the expansion of the spirits used in making it by 1° at the heat of 65°, was found to be $\frac{1}{1786}$ of their bulk at that heat; that is $s = \frac{1}{1786}$; $m = \frac{1}{11500}$; therefore $G = 1{,}013$. From M. De Luc's experiments * it appears, that the expansion of spirits of wine by 1° at any degree of heat, as 65°—x, is to its expansion by 1° at 65°, nearly as $1 - \frac{x}{315}$ to 1: therefore, $d = \frac{1}{315}$. The compressibility of the spirits used for this thermometer at the heat of 58°, was found to be exactly the same as Mr. Canton determines it to be at that heat; and therefore its compressibility at all other degrees of heat is supposed to be the same as he makes it. According to his experiments †, the compression of spirits of wine by the pressure of 29½ inches of mercury at the heat of 32°, *id est*, nearly the heat of the sea in these experiments, is 59¼ millionth parts of its bulk at that heat; therefore $\frac{C}{sG} = 1{,}9$ and $65 - x = 65 - F - E + N \times 1{,}9 - \frac{E \times \overline{E + F + x}}{638} + \frac{N \times 1{,}9 \times \overline{F + x}}{638}$."

* Modifications de l'Atmosphere, Vol. I. page 252.

† Philosophical Transactions, Vol. LIV. page 261.

Observations

Obſervations made by Dr. Irving of the Heat of the Sea agitated by a Gale of Wind, and that of the Atmoſphere.

SEPTEMBER the twelfth, the thermometer plunged into a wave of the ſea, roſe to 62°; the heat of the atmoſphere 50°.

This experiment was frequently repeated during the gale, and it gave nearly the ſame difference. At night, when the weather became moderate, the heat of water thirty fathoms below the ſurface was 55°; the ſurface and the atmoſphere were 54°

September the twenty-ſecond, the ſea-water was 60°; the atmoſphere 59°: the wind at S. W., a freſh gale.

Obſervations for determining the Height of a Mountain in Latitude 79° 44′; by the Barometer, and Geometrical Meaſurement.

Obſervations taken by the Barometer by Dr. Irving.

AUGUST the eighteenth, the day remarkably clear.

	Inches.
At ſix in the morning, the barometer by the ſea-ſide ſtood at -	30,040
The thermometer 50°.	
On the ſummit of the mountain, about an hour and three quarters later than the firſt obſervation below, - - -	28,266
Thermometer 42°.	
At about an hour later at the ſame place, - - -	28,258
Thermometer 42°.	
By the ſea-ſide, where the firſt obſervation was made, and about three hours later, - - - -	30,032
Thermometer 44°.	

Height of the mountain calculated by M. De Luc from the firſt obſervation - - -	1585 feet
From the ſecond obſervation - -	1592
Mean - - - -	1588 ½

Means uſed to aſcertain the Height of the Mountain Geometrically.

A POINT was fixed upon, in the moſt convenient place the ground would admit of between the ſummit of the mountain (a well-defined object) and the ſea-ſide; from hence, in a right line from the mountain, a ſtaff was placed at the ſea-ſide, by a theodolite made by Ramſden, with two teleſcopes and double Vernier diviſions. The inſtrument was carefully adjuſted; firſt, by levelling the ſtand with a circular level, and afterwards the whole inſtrument by the croſs levels. From hence (A) at right angles to the ſtation at the ſea-ſide (C) and the top of the mountain (E), a baſe was meaſured each way to (B) and (D) of eight lines of ſeventeen fathom each; in all, five hundred and forty-four yards. The diviſions of both the Verniers were carefully examined, both at ſetting off the ſtation by the ſea-ſide, and thoſe at the extremities of each baſe, the fixed teleſcope being kept directed to the ſummit of the mountain, and the moveable one directed at right angles each way, both diviſions of the Vernier coinciding exactly. Station ſtaves were fixed perpendicular by the vertical hair of the teleſcope. The altitude

of the mountain was then taken with the vertical arch, as a means of detecting any error in the obſervation, and was found to be 8° 50′. The diſtance not enabling me to take the depreſſion of any particular part of the ſtaff by the ſea-ſide under the land on the other ſide accurately, I ſent a man to ſtand cloſe before it, and took the depreſſion nearly to his eye, which was found to be 1° 54′. The inſtrument was then removed to the ſtation on the right (B). The inſtrument being adjuſted with the ſame precautions as before, and the fixed teleſcope pointing to the center ſtation (A); the angle to the mountain was 84° 58′, the angle to the ſtation by the water-ſide (C) 294° 44′. The inſtrument was then removed to the ſtation by the ſea-ſide (C), the ſame precautions uſed in adjuſting, and the fixed teleſcope pointing to the center (A) in one with the mountain, the angle to the ſtaff on the right (B) was 24° 44′ Intending to make the triangle B C D iſoſceles, and imagining there might be ſome little error from the unevenneſs of the ground, I ſet off on the theodolite an angle equal to the laſt, having a perſon ready with a ſtaff on the baſe line to fix it where that angle ſhould interſect on looking through the teleſcope; I found it cut exactly at the ſtaff D 335° 16′, and from thence concluded the meaſure of the baſe to be exact. I then took the altitude of the mountain by the vertical arch 7° 44′. I then removed the inſtrument to the ſtation (D) to take the third angle; but from the badneſs of the ground, I could not place the inſtrument exactly over the ſpot where the ſtaff ſtood; from hence I took the third angle of the triangle; the fixed teleſcope pointing to (A), and the ſame precautions of adjuſtment being obſerved, the angle to C came out 65° 15′; leſs by one minute than it ſhould have been. I then took from the ſame place the angle to the mountain (E) 275° 1′; more by one minute than the correſponding angle at the oppoſite ſtation (B): but the errors correcting each other, the whole angle C D E = 150° 14′ = the whole angle C B E.

By the triangle A B C, A C comes out 1771,4 feet:
By the triangle A B E, A E comes out 9265,0 feet:
Therefore the diſtance C E is - 11036,4 feet.
Angle of the mountain's elevation ſeen from C 7° 44′:
Height of the mountain above C - 1498,8 feet:
+ height of C above the water's edge 5:
Height of the mountain above the water's edge 1503,8 feet.

I prefer this obſervation to the others, becauſe the three angles of the triangle A B C came out exactly 180 degrees by the obſervation. The diſtance A C found by the computation, differed only four feet from that by the meaſure; but, the ground being uneven, I did not depend upon the meaſure, but took it merely as a check upon the operation, to detect an error, in caſe of any great difference.

The diſtance found by the ſimilar triangles B C E and C D E comes out 11037 feet;
The angle of the mountain's elevation ſeen from A was 8° 50′;
Hence the height of the mountain above A was found - - 1439,8 feet:
Depreſſion of C ſeen from A was - - 1° 54′;
Hence the height of A above C is - - - 58, 7 feet;
Height of the mountain above C - - - 1498,5 feet:
+ height of C above water's edge - - - 5;
Height of mountain above the level of the ſea - - 1503,5 feet;
which differs from that found by the ſingle angle three-tenths of a foot.

I cannot account for the great difference between the geometrical meaſure and the barometrical one according to M. De Luc's calculation, which amounts to 84,7 feet. I have no reaſon to doubt the accuracy of Dr. Irving's obſervations, which were taken with great care. As to the geometrical meaſure, the agreement of ſo many triangles, each

each of which muſt have detected even the ſmalleſt error, is the moſt ſatisfactory proof of its correctneſs. Since my return, I have tried both the theodolite and barometer, to diſcover whether there was any fault in either, and find them upon trial, as I had always done before, very accurate.

Natural Hiſtory.

THOUGH the ſhortneſs of my ſtay at Spitſbergen, and the multiplicity of occupations, in which I was neceſſarily employed, during the greateſt part of that time, rendered it impoſſible for me to make many obſervations on its natural productions; yet as there are among thoſe few ſome which have not before been made public, I am in hopes that this article will not be found wholly unprofitable. The following catalogue, imperfect as it is, may ſerve to give a general idea of the ſparing productions of that inhoſpitable climate.

As modern naturaliſts have formed the technical terms of their ſcience out of the Latin, it becomes neceſſary to make ſome uſe of that language, in order to render the deſcriptions of ſuch things as are new, intelligible to thoſe for whoſe uſe they are intended: I ſhall always, however, annex Engliſh names to the ſcientifick ones, when ſuch are to be found.

MAMMALIA.—Trichechus Roſmarus, *Linn. Syſt. Nat.* 49. 1.
Arctick Walrus. *Penn. Syn. Quadr.* p. 335.

This animal, which is called by the Ruſſians Morſe, from thence by our ſeamen corruptly Sea-Horſe, and in the Gulph of St. Lawrence Sea-Cow, is found every where about the coaſt of Spitſbergen, and generally wherever there is ice, though at a diſtance from the land. It is a gregarious animal, not inclined to attack, but dangerous if attacked, as the whole herd join their forces to revenge any injury received by an individual.

Phoca Vitulina. *Linn. Syſt. Nat.* 56. 3.
Common Seal. *Penn. Syn. Quadr.* p. 339.

Found on the coaſt of Spitſbergen.

Canis Lagopus. *Linn. Syſt. Nat.* 95. 63.
Arctick Fox. *Penn. Syn. Quadr.* p. 155.

Found on the main land of Spitſbergen and iſlands adjacent, though not in any abundance. It differs from our fox, beſides its colour, in having its ears much more rounded. It ſmells very little. We ate of the fleſh of one, and found it good meat.

Urſus Maritimus. *Linn. Syſt. Nat.* 70. 1.
Polar Bear. *Penn. Syn. Quadr.* p. 192. t. 20. f. 1.

Found in great numbers on the main land of Spitſbergen; as alſo on the iſlands and ice-fields adjacent. We killed ſeveral with our muſkets, and the ſeamen ate of their fleſh, though exceeding coarſe. This animal is much larger than the black bear; the dimenſions of one were as follows:

	Feet.	Inches.
Length from the ſnout to the tail,	7	1
Length from the ſnout to the ſhoulder-bone,	2	3
Height at the ſhoulder,	4	3
Circumference near the fore-legs,	7	0
Circumference of the neck cloſe to the ear,	2	1
Breadth of the fore paw,	0	7

Weight of the carcaſe without head, ſkin, or entrails, 610lb.

Cervus Tarandus. *Linn. Syſt. Nat.* 93. 4.
Rein Deer. *Penn. Syn. Quadr.* p. 46. t. 8. f. 1.
Found every where on Spitſbergen. We ate the fleſh of one which we killed, and found it excellent veniſon.
Balaena Myſticetus. *Linn. Syſt. Nat.* 105. 1.
Common Whale. *Penn. Brit. Zool.* p. 85.
This ſpecies, which is ſought after by the fiſhermen in preference to all other whales, is generally found near the ice. We ſaw but few of them during our ſtay.
Balaena Phyſalus. *Lynn. Syſt. Nat.* 106. 2.
Fin Fiſh. *Penn. Brit. Zool.* p. 41.
Found in the ocean near Spitſbergen.

Aves.—Anas molliſſima. *Linn. Syſt. Nat.* 198. 15.
Eider Duck. *Penn. Brit. Zool.* p. 454.
Found on the coaſt of Spitſbergen.
Alca arctica. *Linn. Syſt. Nat.* 211. 4.
The Puffin. *Penn. Brit. Zool.* p. 405.
Found on the coaſt of Spitſbergen.
Alca Alle. *Lynn. Syſt. Nat.* 211. 5.
Found on the coaſt of Spitſbergen in great abundance.
Procellaria glacialis. *Lynn. Syſt. Nat.* 213. 3.
The Fulmar. *Penn. Brit. Zool.* p. 431.
Found on the coaſt of Spitſbergen.
Colymbus Grylle. *Linn. Syſt. Nat.* 220. 1.
Found on the coaſt of Spitſbergen.
Colymbus Troile. *Linn. Syſt. Nat.* 220. 2.
Found on the coaſt of Spitſbergen.
Colymbus glacialis. *Linn. Syſt. Nat.* 221. 5.
The great Northern Diver. *Penn. Brit. Zool.* p. 413.
Found on the coaſt of Spitſbergen.
Larus Riſſa. *Linn. Syſt. Nat.* 224. 1.
Found on the coaſt of Spitſbergen.
Larus Paraſiticus. *Linn. Syſt. Nat.* 226. 10.
The Arctick Gull. *Penn. Brit. Zool.* p. 420.
Found on the coaſt of Spitſbergen.
Larus Eburneus, niveus, immaculatus, pedibus plumbeo-cinereis.
Found on the coaſt of Spitſbergen.
This beautiful bird is not deſcribed by Linnæus, nor, I believe, by any other author; it is nearly related indeed to the rathſher, deſcribed by Marten in his voyage to Spitſbergen, (ſee page 77 of the Engliſh tranſlation) but, unleſs that author is much miſtaken in his deſcription, differs eſſentially from it. Its place in the Syſtema Naturæ ſeems to be next after the Larus nævius, where the ſpecifick difference given above, which will diſtinguiſh it from all the ſpecies deſcribed by Linnæus, may be inſerted.
Deſcription.—Tota avis (quoad pennas) nivea, immaculata.
Roſtrum plumbeum.
Orbitæ oculorum croceæ.
Pedes cinereo-plumbei. Ungues nigri.
Digitus Poſticus articulatus, unguiculatus.
Alæ cauda longiores.

Cauda æqualis, pedibus longior.

Longitudo totius avis, ab apice roſtri ad finem caudæ	Uncias	16
Longitudo inter apices alarum expanſarum		37
——— Roſtri		2

Sterna Hirundo. *Linn. Syſt. Nat.* 227. 2.
The greater Tern. *Penn. Brit. Zool.* p. 428.

Found on the coaſt of Spitſbergen.

Emberiza nivalis. *Linn. Syſt. Nat.* 308. 1.
The greater Brambling. *Penn. Brit. Zool.* 321.

Found not only on the land of Spitſbergen, but alſo upon the ice adjacent to it, in large flocks: what its food can be is difficult to determine; to all appearance it is a granivorous bird, and the only one of that kind found in theſe climates, but how that one can procure food in a country which produces ſo few vegetables, is not eaſy to gueſs.

AMPHIBIA.—Cyclopterus liparis. *Linn. Syſt. Nat.* 414. 3.
Sea Snail. *Penn. Brit. Zool.* III. p. 105.

Two only of theſe were taken in a trawl near Seven Iſland Bay.

PISCES.—Gadus Carbonarius. *Linn. Syſt. Nat.* 438. 9.
The Coal Fiſh. *Penn. Brit. Zool.* III. p. 152.

Though we trawled ſeveral times on the north ſide of Spitſbergen, and the ſeamen frequently tried their hooks and lines, yet nothing was taken except a few individuals of this and the foregoing ſpecies.

INSECTA.—Cancer Squilla. *Linn. Syſt. Nat.* 1051. 66.
The Prawn. *Merr. Pinn.* 192.

Found in the ſtomach of a ſeal, caught near the coaſt of Spitſbergen.

Cancer Boreas, macrourus, thorace carinato aculeato, manibus lævibus, pollice ſubulato incurvo.

This ſingular ſpecies of crab, which has not before been deſcribed, was found with the former in the ſtomach of a ſeal; its place in the Syſtema Naturæ ſeems to be next after Cancer Norwegicus.

Deſcription.—Thorax ovatus, tricarinatus: carinæ laterales tuberculoſæ, antice ſpina acuta terminatæ; carina dorſalis ſpinis tribus vel quatuor validis armata; antice producta in roſtrum porrectum, acutum, breve, thorace quintuplo brevius; præter ſpinas carinarum, anguli laterales thoracis antice in ſpinas terminantur.

Antennæ duæ, thorace fere triplo breviores, bifidæ: ramulus ſuperior craſſiuſculus, filiformis, obtuſus; inferior gracilis, ſubulatus.

Palpi duo, duplicati; ramus ſuperior foliatus, ſeu explanatus in laminam ovalem, obtuſam, longitudine antennarum, intus et antice villis ciliatam; ramus interior antenniformis, ſubulatus, multiarticulatus, antennis triplo longior.

Paraſtatides decem, anteriores parvi; poſtremi magni, pediformes articulo ultimo explanato in laminam ovali-oblongam.

Pedes decem, duo primores cheliferi, carpis incraſſatis, reliqui ſimplices; pares ſecundi at tertii filiformes, graciles; quarti et quinti craſſiuſculi.

Cauda thorace longior, ſexarticulata; articulis quinque anterioribus carinatis, carinis ſpina antrorſum vergente armatis; articulus ſextus ſupra bicarinatus, muticus, terminatus foliolis quinque, articulis caudæ longioribus; intermedio lanceolato, acuto, porrecto, craſſo, ſupra planiuſculo, quadricarinato carinis interioribus obſoletis, ſubtus concavo; lateralibus ovali-oblongis, obtuſis.

Neuſteri

Neuſteri decem, (nulli ſub articulo ultimo) duplicati; foliolis lanceolatis, ciliatis.

Obſ.—Specimina magnitudine variant, alia triuncialia, alia ſeptem uncias longa.

Cancer Ampulla, macrourus, articularis, corpore ovali, pedibus quatuordecim ſimplicibus, laminis femorum poſtici paris ovato-ſubrotundis.

This ſingular animal was alſo taken out of the ſtomach of the ſame ſeal in which the two former were found. Its place in the Syſtema Naturæ is next to Cancer Pulex.

Deſcription.—Inſectum ex ovali-oblongum, glabrum, punctulatum, articulis quatuordecim compoſitum, quorum primus capitis eſt, ſeptem thoracem mentiuntur, et ſex caudam tegunt.

Capitis clypeus antice inter antennas in proceſſum conicum, acutum deſcendit.

Antennæ quatuor, ſubulatæ, articulatæ, ſimplices, corpore decuplo breviores.

Pedes quatuordecim, ſimplices, unguiculati; femora poſtremi paris poſtice acuta, lamina dimidiato-ſubrotunda, integra, magna, quatuor lineas longa.

Cauda foliata, foliolo unico brevi bifido: laciniæ lanceolatæ, acutæ.

Neuſteri duodecim, duplicati, ſubulati, pilis longis ciliati, poſteriores retrorſum porrecti.

Obſ.—Specimina magnitudine variant, uncialia et biuncialia erant.

Cancer nugax, macrourus, articularis, pedibus quatuordecim ſimplicibus, laminis femorum ſex poſteriorum dilatatis ſubrotundo-cordatis.

This animal, which has not before been deſcribed, ſhould be inſerted in the Syſtema Naturæ near Cancer Pulex; it was taken in the trawl near Moſſen Iſland.

Deſcription.—Inſectum oblongum, compreſſum, dorſo rotundatum, glabrum, ſeſquiunciale, articulis quatuordecim compoſitum, quorum primus capitis eſt, ſeptem thoracem mentiuntur, et ſex caudam efficiunt.

Capitis clypeus ſinu obtuſo antice pro antennis emarginatus.

Antennæ quatuor, ſubulatæ, multiarticulatæ; ſuperiores corpore ſextuplo breviores, bifidæ: articulo baſeos communi, magno; ramulus interior exteriori duplo brevior.

Inferiores ſimplices, ſuperioribus duplo longiores.

Pedes quatuordecim, ſimplices, unguiculati, unguibus parum incurvis. Femora ſex poſteriora poſtice aucta.

Lamina foliacea, ſubrotundo-cordata, dimidiata, margine integra, magna, (tres lineas longa.)

Cauda apice foliata. Foliolis duobus, oblongis, obtuſis, parvis.

Neuſteri duodecim, duplicati, lineari-lanceolati, poſteriores retrorſum porrecti, ut facile pro appendicibus caudæ ſumantur.

Cancer Pulex. *Linn. Syſt. Nat.* p. 1055. 81.

Taken up in the trawl along with the former.

Vermes.—Sipunculus Lendix, corpore nudo cylindraceo, apertura ſubterminali.

Found adhering, by its ſmall ſnout, to the inſide of the inteſtines of an Eider duck. Mr. Hunter, who at my requeſt diſſected it, informed me, that he had ſeen the ſame ſpecies of animal adhering to the inteſtines of whales.

Deſcription.—Corpus croceum, ſubcylindraceum, tres lineas longum, craſſitie pennæ paſſerinæ, utraque extremitate parum attenuatum, apice terminatum in roſtrum anguſtum corpore quintuplo brevius, quo tunicis internis inteſtinorum ſeſe affigit; prope alteram extremitatem apertura ſimplex, pro lubitu extenſibilis.

Aſcidia gelatinoſa. *Linn. Syſt. Nat.* 1087. 2.

Taken up in the trawl, on the north ſide of Spitſbergen.

Aſcidia

Aſcidia ruſtica. *Linn. Syſt. Nat.* 1087. 5.

Taken up likewiſe in the trawl, on the north ſide of Spitſbergen.

Lerna branchialis. *Linn. Syſt. Nat.* 1092. 1.

Found in the gills of the ſea-ſnail mentioned before.

Clio helicina nuda corpore ſpirali.

Marten's Spitſbergen Engliſh, p. 141. t. Q. fig. *e*. Snail ſlime fiſh.

Found in innumerable quantities throughout the arctic ſeas.

Deſcription.—Corpus magnitudine piſi, in ſpiram ad inſtar helicis involutum. Alæ ovatæ, obtuſæ, expanſæ, corpore majores.

Clio limacina nuda, corpore obconico.

The Sea May Fly. *Marten's Spitſbergen Engliſh*, p. 169. Tab. P. f. 5.

This little animal is found where the laſt is, in equal abundance, peopling as it were this almoſt uninhabited ocean. Marten ſays that they are the chief food of the whale-bone whale; and our fiſhermen, who call them by the name of whale food, are of the ſame opinion.

Meduſa capillata. *Linn. Syſt. Nat.* 1097. 6.

Sea Blubber.

Taken up on the paſſage home, about the latitude 65°.

Aſterias pappoſa. *Linn. Syſt. Nat.* 1098. 2.

Taken up on the north ſide of Spitſbergen.

Aſterias rubens. *Linn. Syſt. Nat.* 1099. 3.

Sea Star.

Alſo taken up in the trawl on the north ſide of Spitſbergen.

Aſterias Ophiura. *Linn. Syſt. Nat.* 1100. 11.

We likewiſe took this up in the trawl, on the north ſide of Spitſbergen.

Aſterias pectinata. *Linn. Syſt. Nat.* 1101. 14.

This, as well as all the reſt of this genus, was taken up in the trawl on the north ſide of Spitſbergen.

Chiton ruber. *Linn. Syſt. Nat.* 1107. 7.

Coat of Mail Shell.

Taken in the trawl, on the north ſide of Spitſbergen.

Lepas Tintinnabulum. *Linn. Syſt. Nat.* 1168. 12.

Acorn Shell.

Was picked up on the beach of Smeerenberg harbour; but as it is much worn and broken, it is impoſſible to be certain, whether it is a native of thoſe ſeas, or has been brought there by accident.

Mya truncata. *Linn. Syſt. Nat.* 1112. 26.

Likewiſe found on the beach in Smeerenberg harbour.

Mytilus rugoſus. *Linn. Syſt. Nat.* 1156. 249.

Was found with the former on the beach at Smeerenberg.

Buccinum carinatum, teſta oblongo-conica tranſverſim ſtriata; anfractibus ſuperioribus oblique obtuſeque multangulis; inferioribus unicarinatis.

Found on the beach at Smeerenberg harbour.

Turbo helicinus, teſta umbilicata convexa obtuſa: anfractibus quatuor lævibus.

Taken up in the trawl, on the north ſide of Spitſbergen.

Serpula ſpiroribus. *Linn. Syſt. Nat.* 1265. 794.

Found in plenty ſticking to the ſtones and dead ſhells in Smeerenberg harbour.

Serpula

Serpula triquetra. *Linn. Syſt. Nat.* 1265. 795.
Found with the laſt adhering to dead ſhells.

Sabella fruſtuloſa, teſta ſolitaria libera ſimplici curvata: fragmentis conchaceis fabuloſiſque.

Taken up in the trawl on the north ſide of Spitſbergen.

Deſcription.—Vagina ſpithamea vel longior, craſſitie pennæ anſerinæ, undique tecta fragmentis conchaceis ſæpe magnitudine unguis, et fabulis magnitudine ſeminum cannabis.

Millepora polymorpha. *Linn. Syſt. Nat.* 1285. 53.
Varietas rubra.

Found thrown up on the beach at Smeerenberg harbour.

Cellepora pumicoſa. *Linn. Syſt. Nat.* 1286. 56.
Found on the beach at Smeerenberg.

Synoicum turgens.
Taken up in the trawl, on the north ſide of Spitſbergen.

This animal is quite new to the natural hiſtorians, and ſo different from the zoophytes which have been hitherto deſcribed, that it may be conſidered as a diſtinct genus, whoſe characters are the following:

Animalia nonnulla, ex apice ſinguli ſtirpis ſeſe aperientia.

Stirpes plures, radicatæ, carnoſo-ſtupoſæ, e baſi communi erectæ, cylindraceæ, apice regulariter pro animalibus pertuſæ.

It ſhould be inſerted next to the alcyonium, with which it in ſome particulars agrees, but differs from it materially in having the openings for the animals only at the top, and the animals themſelves not exſerted like polypes (hydra), which is the caſe in the alcyonium.

Deſcription.—Stirpes plures, radicatæ, carnoſo-ſtupoſæ, digitiformes, cylindraceæ, ſuperne paulo craſſiores, obtuſæ, magnitudine digiti infantis, ſuberectæ, apice orificiis nonnullis perforatæ, inferne dilatatæ ſeu explanatæ in baſin communem lapidibus adhærentem.

Orificia ſex ad novem, ordine circulari plerumqne diſpoſita; ſub ſingulo orificio cavitas longitudinalis, forſitan ſingulo animali propria, in qua

1. Faux anguſta, brevis.

2. Inteſtinum inſtar ſtomachi dilatatum, oblongo-ovatum, inferne foraminibus duobus pertuſum; inter illa foramina aliud deſcendit inteſtinum, valde anguſtum, filiforme, arcum brevem formans.

Cavitas, quæ per totam ſtirpem longitudinaliter pro ſingulo animali deorſum tendit, ſuperne ab inteſtinis vix diſtincta, infra illa autem cylindrum exhibet granulis parvis (forſitan ovulis) repletam.

Fluſtra piloſa. *Linn. Syſt. Nat.* 1301. 3.
Found adhering to ſtones in Smeerenberg harbour.

Fluſtra membranacea. *Linn. Syſt. Nat.* 1301. 5.
Found with the laſt-mentioned ſpecies.

Plantæ.—Agroſtis algida panicula mutica contracta, calycibus breviſſimis inæqualibus.

This ſmall graſs, which has not before been known to botaniſts, may be inſerted among the ſpecies of agroſtis next to the minima.

Deſcription.

Deſcription.—Gramen in cæſpitibus naſcens.

Radix fibroſa perennis.

Folia plurima radicalia, pauciſſima caulina, glabra, latiuſcula, longitudine culmi, patula, baſi dilatata in vaginas laxas.

Culmi adſcendentes, glabri, ſeſquiunciales.

Panicula lineari-oblonga, contracta, ſtricta, multiflora.

Calycis Glumæ membranaceæ, albidæ, glabræ, muticæ, inæquales: exterior minutiſſima, ovata, obtuſa; interior oblonga, acuta, corolla quintuplo brevior.

Corollæ Glumæ oblongæ, acutæ, carinatæ, muticæ, glabræ, ſemilineares: exterior paulo longior.

Stamina tria.

Stigmata duo.

Semen unicum, oblongum, utrinque acuminatum, a corolla liberum.

Tillæa aquatica. *Linn. Spec. Plant.* 186. 2.

Juncus campeſtris. *Linn. Spec. Plant.* 468. 17.

Saxifraga oppoſitifolia. *Linn. Spec. Plant.* 575. 18.

Saxifraga cernua. *Linn. Spec. Plant.* 577. 26.

Saxifraga rivularis. *Linn. Spec. Plant.* 577. 28.

Saxifraga cæſpitoſa. *Linn. Spec. Plant.* 578. 34.

Ceraſtium alpinum. *Linn. Spec. Plant.* 628. 8.

Ranunculus ſulphureus, calycibus hirſutis, caule ſub-bifloro, petalis rotundatis, integerrimis, foliis inferioribus ſublobatis, ſupremis multipartitis.

Ranunculus quartus. *Mart. Spitz. Engl.* p. 58. t. t. f. *d.*

Obſ.—Primo intuitu ranunculo glaciali ſimillimus, differt autem, quod petala rotundata, integerrima, intenſe lutea, fulgida; et folia minus ſubdiviſa; ſuperiora fiſſa, laciniis oblongo-lanceolatis integerrimis; inferiora caulina lata, plana, leviter triloba vel quadriloba.

This new plant ſhould be inſerted next to ranunculus glacialis.

Cochlearia Danica. *Linn. Spec. Plant.* 903. 3.

Cochlearia Groenlandica. *Linn. Spec. Plant.* 904. 4.

Salix herbacea. *Linn. Spec. Plant.* 1445. 16.

Polytrichum commune. *Linn. Spec. Plant.* 1573. 1.

Bryum Hypnoïdes. *Linn. Spec. Plant.* 1584. 21.

Beſides theſe, there were two other kinds of bryum, the ſpecies of which could not be determined, for want of the fructification; the one reſembled bryum trichoides læte virens, &c. *Dill. Muſc.* 391. t. 50. f. 61.; and the other bryum hypnoïdes pendulum, *Dill. Muſc.* 394. t. 50. f. 64. C.

Hypnum aduncum. *Linn. Spec. Plant.* 1592. 23.

Jungermannia julacea. *Linn. Spec. Plant.* 1601. 20.

Another ſpecies of jungermannia was alſo found, but without fructification; it is not much unlike lichenaſtrum ramoſius foliis trifidis. *Dill. Muſc.* 489. t. 70. f. 15.

Lichen ericetorum. *Linn. Spec. Plant.* 1608. 12.

Lichen Iſlandicus. *Linn. Spec. Plant.* 1611. 29.

Lichen nivalis. *Linn. Spec. Plant.* 1612. 30.

Lichen caninus. *Linn. Spec. Plant.* 1616. 48.

Lichen polyrrhizos. *Linn. Spec. Plant.* 1618. 57.

Lichen pyxidatus. *Linn. Spec. Plant.* 1619. 60.

Lichen cornutus. *Linn. Spec. Plant.* 1620. 64.
Lichen rangiferinus. *Linn. Spec. Plant.* 1620. 66.
Lichen globiferus. *Linn. Mant.* 133.
Lichen paſchalis. *Linn. Spec. Plant.* 1621. 69.
Lichen chalybeiformis. *Linn. Spec. Plant.* 1623. 77.

Account of Doctor Irving's Method of obtaining freſh Water from the Sea by Diſtillation.

As the method of rendering ſalt water freſh by diſtillation, introduced by Doctor Irving into the Royal Navy in the year 1770, and practiſed in this voyage, is an object of the higheſt importance to all navigators, and has not hitherto been generally known, I have added the following very full account of its principles, apparatus, and advantages, with which I was favoured by Doctor Irving himſelf.

" Previous to an account of this method of rendering ſea water freſh by diſtillation, it may not be improper to give a ſhort detail of the experiments which have been formerly made by others on this ſubject; pointing out at the ſame time the ſeveral diſadvantages attending their proceſſes, and the general cauſes which obſtructed the deſired ſucceſs.

" Without entering into an account of the earlier experiments, it will be ſufficient to take a view of ſuch as have been proſecuted with moſt attention, for the laſt forty years.

" The firſt of theſe was the proceſs of Mr. Appleby, publiſhed by order of the Lords of the Admiralty, in the Gazette of June 22d, 1734. By the account of that proceſs it appears, that Mr. Appleby mixed with the ſea water to be diſtilled, a conſiderable quantity of the *lapis infernalis* and calcined bones. The highly unpalatable taſte of the water, however, excluſive of the extreme difficulty, if not impoſſibility, of reducing the proceſs into practice, prevented the further proſecution of this method.

" Another proceſs for procuring freſh water at ſea, was afterwards publiſhed by Doctor Butler. Inſtead of the *lapis infernalis* and calcined bones, he propoſed the uſe of ſoap leys; but though the ingredients were ſomewhat varied, the water was liable to the ſame objections as in the preceding experiment. Doctor Stephen Hales uſed powdered chalk; and introduced ventilation, by blowing ſhowers of air up through the diſtilling water, by means of a double pair of bellows. It was found by this method that the quantity of freſh water obtained in a given time, was ſomewhat greater than what had been procured by the proceſs of Mr. Appleby. This invention, however, was ſubject to ſeveral diſadvantages. The air box which lay on the bottom of the ſtill, as well as the chalk, much obſtructed the action of the fire upon the water, at the ſame time that the boiling heat of the latter was diminiſhed by the ventilation: ſo that more than double the uſual quantity of fuel was neceſſary to produce the ſame effect. Beſides this method by no means improved the taſte of the water.

" The next who attempted any improvement was the learned Doctor Lind, of Portſmouth. He diſtilled ſea water without the addition of any ingredients; but as the experiment he made was performed in a veſſel containing only two quarts, with a glaſs receiver, in his ſtudy, nothing concluſive can be drawn from it for the uſe of ſhipping. Indeed experiments of the like kind had been made by the chemiſts in their laboratories, for at leaſt a century before.

" In the year 1765, Mr. Hoffman introduced a ſtill of a new conſtruction, with a ſecret ingredient; but the large ſpace which this machine occupied, being ſeven feet five inches, by five feet eight inches, and, with its apparatus, ſix feet ſeven inches high, made it extremely inconvenient: at the ſame time that, on account of its ſhallow form,

the uſe of it was impracticable during any conſiderable motion of the ſhip. The water obtained, likewiſe, poſſeſſed all the diſadvantages common to the preceding methods.

" About the ſame time experiments were made with a ſtill of the common conſtruction, and Mr. Dove's ingredient. This method was attended with no advantage over any that had been formerly uſed; the diſtilled was moſt unpalatable; and the enormous ſize of the apparatus, which occupied a ſpace of thirteen feet ſeven inches by ſix feet one inch, and ſix feet five inches in height, rendered it impracticable on board ſhips. An experiment was immediately afterwards made with the ſame ſtill without any ingredient; the reſult, however, was uniformly a moſt unpalatable taſte of the water.

" About this period, alſo, M. Poiſſonnier of Paris introduced into the French marine a ſtill, three feet ſix inches long, two feet wide, and eighteen inches deep. A portion of the chimney paſſed through the upper part of the ſtill, much in the ſame manner as that of Mr. Hoffman: theſe gentlemen ſuppoſed that by this means they ſhould ſave fuel. The mouth of M. Poiſſonnier's ſtill was thirteen inches wide, on which he placed a tin plate, pierced like a cullender, with thirty-ſeven holes of ſix lines diameter each; to theſe were fixed tin pipes, of the ſame bore and ſeven inches long, terminating within the ſtill-head. The intention of this contrivance is to prevent any of the water in the ſtill from paſſing over into the worm, while the ſhip is in conſiderable motion.

" In every other reſpect M. Poiſſonnier employs a ſtill-head, worm-pipe, and worm-tub, with all its uſual apparatus; and he directs ſix ounces of *foſſil alcali* to be mixed with the ſea water at each diſtillation, to prevent the acid of the magneſia ſalt from riſing with the vapour, when ſalt begins to form on the bottom of the ſtill. It is probable that in M. Poiſſonnier's ſtill, which was even more ſhallow in its form that Mr. Hoffman's, ſome of the water might be thrown up toward the worm; in which caſe the pierced plate with pipes might be of ſome ſervice in breaking the direction of the water. But by Doctor Irving's tube this inconvenience is entirely prevented, as experience fully evinces, viz. in a voyage to Falkland's Iſlands, where it has been uſed in diſtillation every day; in ſeveral voyages to the Eaſt Indies; and in this voyage, as is mentioned in the journal.

" M. Poiſſonnier, in correcting this error in the conſtruction of his ſtill, has introduced another of the moſt capital nature in diſtillation. For by means of the pipe-cullender, the vapour will meet with the greateſt reſiſtance to its aſcent, which will retard the progreſs of diſtillation in a very high degree, and increaſe the *Empyreuma*.

" From all the experiments above-mentioned, it is evident, that no method had hitherto been invented of making ſea water freſh, which was not attended with ſuch inconveniencies as rendered the ſeveral proceſſes of ſcarce any utility. The defects of the various methods above enumerated, may be reduced to the following heads:

" 1. The ſmall quantity of water produced by the ordinary methods of diſtillation with a ſtill-head, and worm, could never be adequate to the purpoſes of ſhipping, though the apparatus ſhould be kept in conſtant uſe; and at the ſame time, this mode of diſtillation required a quantity of fuel, which would occupy greater ſpace than might be ſufficient for the ſtowage of water.

" 2. A ſtill-burnt taſte, which always accompanies this method of diſtillation, and renders the water extremely unpalatable, exciting heat and thirſt, if drank when recently diſtilled.

" 3. A total ignorance with reſpect to the proper time of ſtopping the diſtillation, whereby ſalt was permitted to form on the bottom of the boiler; which burning, and corroding the copper, decompoſed the ſelenitic and magneſia ſalts, cauſing their acids to

aſcend with the vapour, and act on the ſtill-head and worm pipe, impregnating the water with metallic ſalts of the moſt pernicious quality.

" 4. The ſpace occupied by the ſtill, ſtill-head, and worm-tub, renders the uſe of them in moſt caſes totally impracticable on board ſhips. Add to this, their wearing out ſo faſt on account of the cauſes above mentioned, the great expence of the apparatus, with the hazard of the ſtill-head being blown off, and the inconveniences thence ariſing.

" 5. The uſe of ingredients, which though omitted in ſome experiments in ſmall, were nevertheleſs erroneouſly conſidered as eſſential to the making ſea-water ſweet and palatable by diſtillation.

" 6. The inconvenience of a cumberſome apparatus, calculated only to be eventually uſeful in unexpected diſtreſs for water, but conſtantly occupying a great deal of room in a ſhip, too neceſſary for the ordinary purpoſes to be ſpared for that object.

" Having ſpecified the principal defects of the ſeveral methods hitherto propoſed for making ſea water freſh, it will be proper before ſtating the advantages of Doctor Irving's method, to conſider briefly the principles of diſtillation in general, and the chemical analyſis of ſea water.

" Water in an exhauſted receiver, riſes in vapour more copiouſly at 180° of Fahrenheit's thermometer, than in the open air at 212°, which may be conſidered as its boiling point.

" It therefore follows, that any compreſſion upon the boiling fluid checks the vapour in riſing, and conſequently diminiſhes the quantity of water obtained. This is clearly exemplified in the ſteam-engine, where the conſumption of water in the boiler is very inconſiderable, in compariſon to what would happen if the compreſſion ariſing from the throat pipe, and valve of that machine was taken off, and the preſſure of the atmoſphere only admitted. But by the reſtraint of that valve, the vapour becomes hotter, and increaſes in rarity and elaſticity; qualities eſſential to the purpoſes of the engine, although the reverſe of thoſe which ought to take place in common diſtillation. For the columns of vapour ſhould be removed from the boiling fluid as faſt as they aſcend, without ſuffering any other reſiſtance than that of the atmoſphere, which, in the ordinary buſineſs of diſtillation, cannot be prevented.

" The impropriety of the common proceſs of diſtillation, will appear evident by comparing it with the above principles and facts.

" In the common method of diſtillation, the whole column of vapour from a ſtill of whatever ſize, after aſcending to the ſtill-head, muſt not only find its paſſage through a pipe of ſcarce an inch and half diameter; but deſcend contrary to its ſpecific gravity through air which is fifteen times its weight, in ſpiral convolutions: a courſe ſo extremely ill adapted to the progreſs of an elaſtic vapour, that frequently the ſtill head is blown off with incredible violence, owing to the increaſed heat and elaſticity of the vapour confined by this conſtruction. In the mean time the external ſurface of the pipe communicates heat to the water in contact with it, which, inſtead of being entirely carried off, mixes the ſurrounding fluid, and heats the whole, rendering it unfit for condenſing the vapour within; eſpecially when it is conſidered that the ſubſtance of the pipe is at leaſt a quarter of an inch thick.

" From what has been ſaid, it is plain, that the quantity of diſtilled water will be leſſened in proportion to the reſiſtance made to the aſcent of the vapour, while the difficulty of condenſation will be greatly augmented, in conſequence of the increaſed heat and elaſticity of the vapour. But theſe diſadvantages, however great, reſpecting the mode of diſtillation, give riſe to another evil of a ſtill more important nature, as affecting the diſtilled fluid with a noxious burnt taſte, or *empyreuma*; occaſioned by the vapour,

highly heated, paſſing over ſo much ſurface of metal, viz. the ſtill-head, crane-neck, and a pipe of ſix or ſeven feet in length, before it reaches the water in the worm tub.

" Having diſcuſſed the ſubject of diſtillation, we come now to treat of the chemical analyſis of ſea water.

" Sea water contains chiefly a neutral ſalt, compoſed of foſſil alcali and marine acid. It likewiſe contains a ſalt which has magneſia from its baſis, and the ſame acid. Theſe two ſalts are blended together in our common ſalt in England, which is prepared by quick boiling down ſea water. But when the proceſs is carried on by the ſun, or a ſlow heat, they may be collected ſeparately; that which has the foſſil alcali for its baſis cryſtallizing firſt; and this is of a vaſtly ſuperior quality for preſerving meat, and for the other culinary purpoſes. The mother liquor now remaining, being evaporated, affords a vitriolic magneſia ſalt, which in England is manufactured in large quantities, under the name of Epſom ſalt.

" Beſides the ſalts, which are objects of trade, ſea-water contains a ſelenitic ſalt, a little true Glauber's ſalt, often a little nitre, and always a quantity of gypſeous earth ſuſpended by means of fixed air.

" The ſpecific gravity of ſea water to that of pure diſtilled water, is at the Nore as 1000 to 1024,6; in the North ſea as 1000 to 1028,02.

" The quantity of ſalt obtained by boiling ſea-water in different latitudes, from 51° 30′ to 80°, 43 N. L. appears from a table in the original work.

" Sea-water, when boiled down to a ſtrong brine, admits with difficulty the ſeparation of freſh water from it; the diſtillation becoming ſlower as the ſtrength of the brine increaſes, ſo that a greater quantity of fuel is conſumed in procuring a ſmaller portion of water, and this likewiſe of a bad quality. From this eſſential circumſtance ariſes the neceſſity of letting out the brine by the cock of the boiler, when the diſtillation is advanced to a certain degree; and of adding more ſea-water to continue the proceſs if required.

" The defects of the ſeveral ſchemes formerly propoſed for rendering ſea-water freſh being pointed out, the general principles of diſtillation explained, and the component parts of ſea-water analytically examined; the advantages of the method invented by Doctor Irving remain to be ſtated, which may be reduced to the following:

" 1. The aboliſhing all ſtills, ſtill heads, worm-pipes, and their tubs, which occupy ſo much ſpace as to render them totally incompatible with the neceſſary buſineſs of the ſhip; and uſing in the room of theſe, the ſhip's kettle or boiler, to the top whereof may occaſionally be applied a ſimple tube, which can be eaſily made on board a veſſel at ſea, of iron plate, ſtove funnel, or tin ſheet; ſo that no ſituation can prevent a ſhip from being completely ſupplied with the means of diſtilling ſea-water.

" 2. In conſequence of the principles of diſtillation being fully aſcertained, the contrivance of the ſimpleſt means of obtaining the greateſt quantity of diſtilled water, by making the tube ſufficiently large, to receive the whole column of vapour; and placing it nearly in a horizontal direction to prevent any compreſſion of the fluid, which takes place ſo much with the common worm.

" 3. The adopting the ſimpleſt and moſt efficacious means of condenſing vapour; for nothing more is required in the diſtillation but keeping the ſurface of the tube always wet; which is done by having ſome ſea-water at hand, and a perſon to dip a mop or ſwab into this water, and paſs it along the upper ſurface of the tube. By this operation the vapour contained in the tube will be entirely condenſed with the greateſt rapidity imaginable; for by the application of the wet mop thin ſheets of water are uniformly ſpread, and mechanically preſſed upon the ſurface of the hot tube; which being con-

verted into vapour, make way for a ſucceſſion of freſh ſheets; and thus both by the evaporation and cloſe contact of the cold water conſtantly repeated, the heat is carried off more effectually than by any other method yet known.

"4. The carrying on the diſtillation without any addition, a correct chemical analyſis of ſea water having evinced the futility of mixing ingredients with it, either to prevent an acid from riſing with the vapour, or to deſtroy any bituminous oil ſuppoſed to exiſt in ſea water, and to contaminate the diſtilled water, giving it that fiery unpalatable taſte inſeparable from the former proceſſes.

"5. The aſcertaining the proper quantity of ſea water that ought to be diſtilled, whereby the freſh water is prevented from contracting a noxious impregnation of metallic ſalts, and the veſſel from being corroded and otherwiſe damaged by the ſalts caking on the bottom of it.

"6. The producing a quantity of ſweet and wholeſome water, perfectly agreeable to the taſte, and ſufficient for all the purpoſes of ſhipping.

"7. The taking advantage of the dreſſing the ſhip's proviſions, ſo as to diſtil a very conſiderable quantity of water from the vapour which would otherwiſe be loſt, without any addition of fuel.

"To ſum up the merits of this method in a few words:

"The uſe of a ſimple tube, of the moſt eaſy conſtruction, applicable to any ſhip's kettle. The rejecting all ingredients; aſcertaining the proportion of water to be diſtilled, with every advantage of quality, ſaving of fuel, and preſervation of boilers. The obtaining freſh water, wholeſome, palatable, and in ſufficient quantities. Taking the advantage of the vapour which aſcends in the kettle, while the ſhip's proviſions are boiling.

"All theſe advantages are obtained by the abovementioned ſimple addition to the common ſhip's kettles. But Doctor Irving propoſes to introduce two further improvements.

"The firſt is a hearth, or ſtove, ſo conſtructed, that the fire which is kept up the whole day for the common buſineſs of the ſhip, ſerves likewiſe for diſtillation; whereby a ſufficient quantity of water for all the œconomical purpoſes of the ſhip may be obtained, with a very inconſiderable addition to the expence of fuel.

"The other improvement is that of ſubſtituting, even in the largeſt ſhips, caſt-iron boilers, of a new conſtruction, in the place of coppers."

Directions for diſtilling Sea-Water.

"As ſoon as ſea-water is put into the boiler, the tube is to be fitted either into the top or lid, round which, if neceſſary, a bit of wet linen may be applied, to make it ſit cloſe to the mouth of the veſſel; there will be no occaſion for luting, as the tube acts like a funnel in carrying off the vapour.

"When the water begins to boil, the vapour ſhould be allowed to paſs freely for a minute, which will effectually clean the tube and upper part of the boiler. The tube is afterwards to be kept conſtantly wet, by paſſing a mop or ſwab, dipped in ſea-water, along its upper ſurface. The waſte water running from the mop, may be carried off by means of a board made like a ſpout, and placed beneath the tube.

"The diſtillation may be continued till three fourths of the water be drawn off, and no further. This may be aſcertained either by a gauge-rod put into the boiler, or by meaſuring the water diſtilled. The brine is then to be let out.

"Water may be diſtilled in the ſame manner while the proviſions are boiling.

"When

"When the tube is made on ſhore, the beſt ſubſtance for the purpoſe is thin copper well tinned, this being more durable in long voyages than tin plates.

"Inſtead of mopping, the tube, if required, may have a caſe made alſo of copper, ſo much larger in diameter as to admit a thin ſheet of water to circulate between them, by means of a ſpiral copper thread, with a pipe of an inch diameter at each end of the caſe; the lower for receiving cold water, and the upper for carrying it off when heated.

"When only a very ſmall portion of room can be conveniently allowed for diſtillation, the machine, which is only twenty-ſeven inches long, may be ſubſtituted; as was done in this voyage. The principal intention of this machine, however, is to diſtil rum and other liquors; for which purpoſe it has been employed with extraordinary ſucceſs, in preventing an *empyreuma*, or *fiery* taſte."

Account of the Aſtronomical Obſervations and Time-keepers, by Mr. Lyons.

"THE obſervations for finding the time at ſea, were taken with a braſs Hadley's ſextant of eighteen inches radius, made by Dollond; and ſometimes by Captain Phipps, with a ſmaller of four inches radius, made by Ramſden, which commonly agreed with the other within a minute. The error of the ſextant was generally found by obſerving the diameter of the ſun; which if the ſame as double the ſemidiameter ſet down in the Nautical Almanac, ſhewed that the inſtrument was perfectly adjuſted; if it differed, the difference was the error of the ſextant. It was neceſſary to know this error of adjuſtment very exactly, and therefore I generally repeated the obſervation of the ſun's diameter ſeveral times, and from the mean of the reſult found the error of the ſextant. This error will equally affect all the obſervations taken near the ſame time, and therefore cannot be diſcovered from the compariſon of ſeveral obſervations. Under the equator, an error of one minute in altitude, near the prime vertical, will only produce an error of four ſeconds in the apparent time; but in the latitude of eighty degrees it will cauſe an error of twenty-three ſeconds. As we generally took ſeveral ſucceſſive obſervations, any error in the obſervation itſelf will be generally independent of the reſt; and as I have calculated each ſeparately, the concluſions will ſhew which are erroneous, by their differing much from the mean of all, which cannot but be very near the truth.

"In calculating theſe obſervations, I found by the logboard how much we had altered our latitude ſince the laſt obſervation; and ſometimes, when we had an obſervation the noon following the obſervation for the time, the latitude of the ſhip at the time the altitudes were taken was inferred from it. As moſt of our altitudes were obſerved when the ſun was near the prime vertical, a ſmall error in the latitude will not produce any conſiderable change in the time; indeed, if it is exactly in the prime vertical, it will not make any change at all.

"To find the longitude from theſe obſervations: to the apparent time found by calculation, apply the equation of time according to its ſign, which will give the mean time; the difference between which and that marked by the watch, will ſhew how it is too ſlow or too faſt for mean time.

"Captain Phipp's pocket watch, made by Mr. Arnold, when compared with the regulator at Greenwich, May 26th, was twenty-four ſeconds too ſlow; it was there found to loſe twelve ſeconds and a quarter a day on mean time. From this it is eaſy to find what time it is at Greenwich at any moment ſhewn by the watch.

"The

"The watch was compared every day about noon with the two time-keepers made by Meſſ. Arnold and Kendal; and from this compariſon, and their rates of going previouſly ſettled at Greenwich, together with knowing how much they differed from mean time at Greenwich before we ſet out, was calculated the table which ſhews what the mean time is at Greenwich according to each time-keeper, when the watch is at twelve hours.

"By the help of this table, we may eaſily find the longitude of the ſhip, as deduced from the going of each time-keeper. Having found how much the watch is too faſt or too ſlow for mean time at the ſhip, we know what the mean time is at the ſhip when the watch is at twelve hours; and by the table we can find what is the mean time at Greenwich at the ſame time, ſuppoſing each time-keeper had kept at the ſame rate of going as it had before our departure: the difference of theſe mean times will give the longitude of the ſhip.

"For example, June 19th, in the afternoon, the watch was 1^{h} $24''$ too ſlow for mean time at the place where we obſerved; therefore, when the watch ſhews twelve hours, the mean time at this place was 12^{h} $1'$ $24''$. At this time I find by the table, that, according to Kendal's time-keeper, the mean time at Greenwich was 12^{h} $2'$ $7''$: from this ſubtracting 12^{h} $1'$ $24''$, the mean time at the ſhip, the remainder, $0'$ $43''$ is the difference of meridians; which, converted into parts of a degree, gives $0°$ $10'$ $45''$ for the longitude of the ſhip according to Kendal, which is to the weſtward, becauſe the mean time at the ſhip is leſs than that at Greenwich.

"When we were on ſhore, the obſervations were made with an aſtronomical quadrant, divided by Mr. Ramſden, of eighteen inches radius, which was placed on a ſolid rock of marble; the error of the line of collimation was found by inverting the quadrant, which was adjuſted by a ſpirit level. The weather did not permit us to take correſponding altitudes of the ſun, ſo that we determined the apparent time by computation from altitudes of the ſun's limb; having before ſettled the latitude of the place of obſervation, from meridian altitudes of the Sun's limbs taken with the ſame inſtrument.

"The latitudes of the ſhip were determined moſt commonly by the meridian altitude of the ſun's lower limb; in a few inſtances, by that of his upper limb, when the lower was not ſo diſtinct, or was hid by the clouds. The height of the eye above the level of the ſea, in all theſe obſervations, was ſixteen feet. When we could not get a meridian obſervation, we made uſe of the method deſcribed in the Nautical Almanac for 1771, from two altitudes taken about noon, and at a little diſtance from it.

"It ſometimes happens that we can only take ſome altitudes very near the time of noon. If we have obſerved any altitudes of the ſun near the prime vertical, we may thence determine how much the watch is too faſt or too ſlow for apparent time; and conſequently, how much the time when the altitudes were taken, is diſtant from noon; it therefore remains how to find how much theſe altitudes are different from the meridian altitude. This may eaſily be found by the following rule:

"To the logarithm of the riſing, taken out of the tables in Nautical Almanac for 1771, add the complement arithmetical of the logarithmic coſine of the ſuppoſed meridian altitude; from the ſum (the index being increaſed by five) ſubtract the logarithm ratio (found by the rules in the abovementioned Ephemeris) the remainder is the logarithmic ſine of the change in altitude.

"EXAMPLE.

"EXAMPLE I.—June the twenty-first, the altitude of the sun's center was observed to be 46° 6′ at 16′ 45″ after apparent noon; the latitude by account was 67° 17′; the sun's declination being then 23° 28′ N., the supposed meridian altitude 46° 11′.

			5.
Supposed latitude 67° 17′	Co. Ar. Cos. 0,41322.	Rising 16′ 45″	2,42643
Sun's declination 23 28	Co. Ar. Cos. 0,03749.	Supposed Mer. Alt. Ar. Co. Cos.	0,15967
			7,58610
Log. ratio 0,45071			0,45071
The change in altitude is +0° 5′			Sine 7,13539
Observed altitude 46 6			
Meridian altitude 46 11			
Declination 23 28			
Altitude of the Equator 22 43			
Latitude 67 17 N.			

"As the altitudes for determining how much the watch differs from apparent time were taken near the prime vertical, a great error in the supposed latitude will make a very insensible change in the apparent time; nor will it create any great difference in the variation of altitude near noon in a given time, as will appear by the following computation:

"Suppose the latitude by account was 68° 17′, a degree greater than before.

			5.
Supposed latitude 68° 17′	Cos. Co. Ar. 0,43178	Rising 16′ 45″	2,42643
Declination 23 28	0,03749	Supposed Mer. Alt. 45. 11. Cos. Co. Ar.	0,15191
			7,57834
Log. ratio 0,46927			0,46927
The change in the sun's altitude is 0° 4′ 25″			Sine 7,10907
Observed altitude 46 6			
Meridian altitude 46 10 25			
Declination 23 28			
Altitude of the Equator 22 42 25			
Latitude 67 17 35 which only differs thirty-five seconds from the true latitude we found before.			

"EXAMPLE II.—June the twentieth, the altitude of the sun's center was observed 0^h 28′ 38″ after midnight, to be 1° 13′, the latitude by account being 67° 40′ N.

			5.
Supposed latitude 67° 40′	Cos. Co. Ar. 0,42022	Rising 28′ 38″	2,89380
Declination 23 28	0,03749	Supposed Mer. Alt. 1° 8′ Cos. Co.	0,00001
			7,89381
Log. ratio 0,45771			0,45771
Change in the altitude —0° 9′			Sine 7,43610
Observed altitude 1 13			
Meridian altitude 1 4			
Co-declination 66 32			
Latitude 67 36 N.			

"There

"There were two time-keepers ſent out for trial by the Board of Longitude: one made by Mr. Kendal, after Mr. Harriſon's principles; the other, by Mr. Arnold: this laſt was ſuſpended in gimmals, but Mr. Kendal's was laid between two cuſhions, which quite filled up the box. They were both kept in boxes ſcrewed down to the ſhelves of the cabin, and had each three locks; the key of one of which was kept by the captain, of another by the firſt lieutenant, and of the third by myſelf; they were wound up each day ſoon after noon, and compared with each other and with Captain Phipps's watch. They ſtopped twice in the voyage, owing to their being run down; they were ſet a-going again, and as they had been daily compared together, it was eaſy to know how long each had ſtopped, from the others that were ſtill going; this time is allowed for in the table of the mean time at Greenwich by each time-keeper.

"When we were on ſhore at the iſland where we obſerved July fifteenth, we found how much the watch was too ſlow for mean time. When we returned from the ice to Smeerenberg, and again compared the watch with the mean time, allowing the ſmall difference of longitude between the iſland and Smeerenberg, we found that it went very nearly at the ſame rate as it did when tried at Greenwich: ſo that its rate of going was nearly the ſame in our run from England to the iſland, from thence to the ice and back again to Smeerenberg, and in our voyage from thence to England, as we found on our return. By this means we were induced to give the preference to the watch, and to conclude that the longitude found by it was not very different from the truth.

"The principles on which this watch is conſtructed, as I am informed by the maker, Mr. Arnold, are theſe: the balance is unconnected with the wheel-work, except at the time it receives the impulſe to make it continue its motion, which is only while it vibrates 10° out of 380°, which is the whole vibration; and during this ſmall interval it has little or no friction, but what is on the pivots, which work in ruby holes on diamonds: it has but one pallet, which is a plane ſurface formed out of a ruby, and has no oil on it.

"Watches of this conſtruction go whilſt they are wound up; they keep the ſame rate of going in every poſition, and are not affected by the different forces of the ſpring: the compenſation for heat and cold is abſolutely adjuſtable.

"Time-keepers of this ſize are more convenient than larger, on ſeveral accounts; they are equally portable with a pocket watch, and by being kept nearly in the ſame degree of heat, ſuffer very little or no change from the viciſſitudes of the weather.

"This watch was exceedingly uſeful to us in our obſervations on land, as the other time-keepers could not ſafely be moved: and indeed, in the preſent voyage, where they were on trial, it was contrary to the intent for which they were put on board, and might have been attended with accidents by which the rate of their going might have been greatly affected.

"The longitudes by Mr. Arnold's larger time-keeper are very different from thoſe by the watch in our voyage back from Spitſbergen to England; owing, probably, to the balance-ſpring being ruſted, as we found when it was opened at the royal obſervatory at Greenwich, on our return.

"The longitudes found by the moon are deduced from diſtances of the moon from the ſun's limbs, or from ſtars, taken with the ſextant; whilſt the altitudes of the moon and ſun, or ſtar, were taken by two other obſervers.

"In one inſtance (June the twenty-ſixth) the obſervations were all made by Captain Phipps with the ſmall ſextant ſucceſſively; and the altitudes of the moon and ſun at the very inſtant the diſtances were obſerved, are deduced from the changes in theſe altitudes during the interval of obſervation.

"I have calculated the longitude from each ſet of obſervations ſeparately, to ſhew how near they agree with each other, and what degree of preciſion one may expect in ſimilar caſes.

"Obſervations of the diſtances of the moon and ſun, or ſtars, may be uſeful to inform us if the time-keepers have ſuffered any conſiderable change in their rate of going. For if the longitude deduced from the moon differs above two degrees from that found by the watches, it is reaſonable to imagine that this difference is owing to ſome fault in the watch, as the longitude found by lunar obſervations can hardly vary this quantity from the truth; but if the difference is much leſs, as about half a degree, it is more probable that the watch is right, ſince a ſmall error in the diſtance will produce this difference.

"The diſtances of the moon from Jupiter were obſerved, becauſe Jupiter is a very bright object; and the obſervations are eaſier and leſs fallacious, particularly that of the altitude, than thoſe of a fixed ſtar, whoſe light is much fainter. This method, however, requires a different form of calculation, from that of the obſerved diſtance of the moon from a fixed ſtar, whoſe diſtances are computed for every three hours, in the nautical Almanac. The principal difficulty in the calculation is to find the moon's longitude from the obſervation of the diſtance. This I have endeavoured to facilitate by the following problem, which may be applied to any zodiacal ſtar, and will be of uſe when the ſtar ſet down in the ephemeris cannot be obſerved.

"PROBLEM.—Having given the diſtance of two objects near the ecliptic, with their latitudes, to find their difference of longitude.

"SOLUTION.—Find an arc A, whoſe logarithmic ſine is the ſum of the logarithms of the ſines of the two latitudes and the logarithmic tangent of half the diſtance, rejecting twenty from the index of the ſum.

"Find an arc B, whoſe logarithmic ſine is the ſum of the logarithmic verſed ſine of the difference of latitude, and the logarithmic cotangent of the diſtance, rejecting ten from the index of the ſum.

"Then A added to the obſerved diſtance, and B ſubtracted from the ſum, leaves the difference of longitude.

"If one of the latitudes is ſouth, and the other north, the ſum of the two arcs A and B ſubtracted from the diſtance, leaves the difference of longitude.

"EXAMPLE.—Auguſt the thirty-firſt, the obſerved diſtance of the moon's center from Jupiter, cleared of refraction and parallax, was 32° 35′ 52″, the moon's latitude being 1° 47′ N., and that of Jupiter 1° 36′ S.

"Latitude ☽	1° 47′	Sine 8,4930	Difference of latitude, 3° 23′	Vers. Sin.	7,2413
Lat. ♃	1 36	Sine 8,4459			
Half diſtance	16 18	Tang. 9,4660	Diſtance 32 36	Cotang.	10,1941
Arc A.	0′ 52″	Sine 26,4049	Arc B. 9′ 25″	Sine	17,4354
The ſum of theſe arcs	—10′ 17″	Subtracted from			
the diſtance	32° 35 52				
leaves	32 25 35	the difference of longitude between the moon and Jupiter.			

"Knowing the longitude of Jupiter from the ephemeris, and the difference between it and that of the moon, we may infer the longitude of the moon by obſervation: and from the longitudes ſet down for noon and midnight of each day in the nautical Almanac, find the apparent time at Greenwich when the moon had that longitude, which compared with the apparent time at the ſhip, will give the difference of meridians."

NARRATIVE OF THE ADVENTURES OF FOUR RUSSIAN SAILORS, WHO WERE CAST IN A STORM UPON THE UNCULTIVATED ISLAND OF EAST SPITZBERGEN, ON WHICH THEY LIVED FOR SIX YEARS AND THREE MONTHS.

[Tranſlated from the German of Profeſſor P. L. Le Roy, Member of the Imperial Academy Der Wiſſenſchaften, at Peterſburg.*]

"Inventrix conſiliorum omnium neceſſitas." HELIODORUS, Lib. VII.

TRAVELS of older ſtanding, and particularly thoſe by ſea, have often been the ſource of exaggerated relations, ſuch ſometimes as greatly exceed the bounds of probability. As highly as we eſteem thoſe authors who have given us juſt accounts of adventures of this nature, as much do we heſitate to give credit to thoſe whoſe narratives, abandoning likelihood, are obnoxious to our judgment. Among theſe it has more than once occurred that writers charged with fallacies, have in after time been found to have related truths in what have been looked upon as idle tales. It were uſeleſs to inſtance here examples of this deſcription.

The adventures which I purpoſe to relate, in as few words as poſſible, may be placed among the learned reſearches of individuals into the globe; they will, it is not unlikely, be worked upon with little regard to probability, and the matters related (in ſome degree wonderful of themſelves) be enlarged with different variations. I muſt certainly own that I knew not at firſt what opinion I ought to form of them myſelf, when M. Venezobre, director of the offices of the pitch merchants, gave me the firſt information reſpecting them from Archangel. The ſailors, whoſe hiſtory I write, were dependants in a degree on Count Peter Iwanowitz Schuwalow, to whom the Empreſs Elizabeth had granted the privilege of fiſhing for whales. I begged this nobleman to give an order that theſe ſailors ſhould be permitted to come over from Archangel, that I might have converſation with them as I wiſhed. The count had the goodneſs to comply with my requeſt; he was himſelf anxious to ſee and ſpeak to them. Accordingly they were wrote for, and two of them were ſent to Peterſburg; the boatſwain, called Alexis Himkoff, fifty years of age, and a ſailor, who was his godſon, and who bore the name of Iwan Himkoff. They arrived in this city at the beginning of the year 1750, and the firſt diſcourſe I held with them was on the eighth of January. They brought with them different articles of their workmanſhip, which I ſhall notice as I proceed, to preſent to Count Schuwalow. I had full opportunity to queſtion them on every point which I could think of, and reiterated my enquiries at different periods; from which I had no doubt of their veracity. I believe alſo that I do not aſſume too much in ſaying, that nothing of what I am about to relate can with any reaſon be called in queſtion.

Now a ground of certainty is furniſhed which will eſtabliſh the truth of theſe adventures. At the time of the arrival of theſe unfortunate ſailors at Archangel, M. Von Klingſtadt, ſub-auditor of the admiralty of that town, cauſed them to be brought before him; he was the firſt to interrogate them on what had befallen them, put down their anſwers in writing, and decided on publiſhing the ſtatement. Shortly after he came to Peterſburg, and ſaw the narrative which I had written, he told me he found it to coincide exactly with that which he had ſketched; and gave up his intention of publiſhing his own. He had the civility to compare his draught with mine, in order to diſcover if

* Riga, 1768. 8vo.

I had omitted to queſtion the men on any ſeparate matters which he had learnt from them. The two accounts did not differ in the ſmalleſt degree in the anſwers given to the various queſtions put to them. This is an inconteſtible evidence of the truth of their narrative, ſince in different places, and at different times, they uniformly ſtated the ſame.

In the year 1743 Jeremias Ottamkoff, an inhabitant of Meſen, in Jergovia, a part of the government of Archangel, bethought himſelf of ſending out a veſſel with fourteen hands to Spitzbergen, to fiſh for whales and ſea-calves, called by the Ruſſians Morgi; in which line he carried on a conſiderable trade. For eight days together this veſſel had a favourable wind, but on the ninth it changed. Inſtead of proceeding to the weſtern ſide of Spitzbergen, to which the Dutch and other nations annually reſort for the whale fiſhery; they were deſirous of ſailing to the eaſtern ſide, and ſhortly reached an iſland which is called Eaſt Spitzbergen, known to the Ruſſians by the name of Maloy Brown, which ſignifies Little Brown; Spitzbergen Proper being called by them Bolſchoy Brown, that is, Great Brown. They were within three werſts of ſhore (two Engliſh miles), when ſuddenly the veſſel was incloſed by ice; this gave them great uneaſineſs. They held a council among themſelves on what to do, when the boatſwain recollected to have heard that ſome inhabitants of Meſen had once reſolved upon wintering on this iſland; they had alſo taken with them the materials of a hut, in ready-fitted timber, on board their ſhip; and this hut had been judged to be certainly at ſome diſtance from the ſea-ſhore. This information of the boatſwain induced them to reſolve on ſpending the winter there themſelves, ſhould the hut remain as they hoped; conſidering that they ſhould run great danger in any caſe if they hazarded remaining at ſea. They deputed four perſons to ſeek for and endeavour to find the hut, and any other medium of aſſiſtance; that is to ſay, the boatſwain, Alexis Himloff, and three ſailors, Iwan Himkoff, Stephen Sharapoff, and Foedor Weregin.

They had to land on a deſert iſland. Theſe unfortunate men were therefore, of courſe, to be ſupplied with arms, and plenty of proviſion. On the other hand, they had to proceed the diſtance of a mile over fragments of ice, now lifted up by the waves, and now driven againſt each other by the wind; which made the way as perilous as laborious, and conſequently enforced the circumſpection of not overloading themſelves, leſt they ſhould ſink, and not arrive.

They provided themſelves for this expedition with a muſquet, a powder-horn, containing twelves charges of powder, a quantity of lead, an axe, a ſmall kettle, a ſtove, a piece of touchwood, a knife, a tin-box full of tobacco, and each his pipe; with theſe few articles and proviſions, did theſe four unfortunate ſailors reach the iſland.

They overcame all their difficulties, and quickly diſcovered the hut they were in ſearch of: it was erected about a quarter of a mile from the ſea. It was about ſix fathoms long; its breadth and its height were each three fathoms. It had a ſmall entrance-hall, which might be two fathoms broad, and conſequently had two doors, the one opening into the hall, the other into the chamber. This ſerved very well to preſerve the warmth of the room when it was heated. To conclude, there was found in this apartment a clay fire-place, ſet up in the Ruſſian manner, i. e. a ſtove without a chimney, ſerving the double purpoſe of cooking the victuals and heating the room, and alſo for men to place themſelves upon: this is a common practice among the country people when they are cold.

I have obſerved that they were without a chimney in this room, and this can excite but little aſtoniſhment: the Ruſſian peaſantry, ſeldom building their houſes in any other manner. As for the ſmoak with which the whole chamber is filled when a fire is made

in the ſtove; to give it vent the door is opened, and three or four windows which are a foot long, and half a foot broad, made in the planks of which the houſe is conſtructed: theſe windows can be ſhut when deſired very cloſely, in frames purpoſely contrived in which they are moved. When a fire is kindled, the ſmoak never ſinks lower than theſe ſmall windows which I have noticed, ſo that a perſon may remain ſeated without being ſubject to much inconvenience from it, and when the apartment has been cleanſed, whether by the door or the windows, they can be drawn to. Without being told, one may eaſily conceive that the upper part of the room down to the windows, muſt be as black as though built of ebony; on the other hand, from the windows to the floor is comparatively clean, and preſerves the appearance of the natural wood, of which the houſe was built.

Satisfied with having found this hut, which ſhortly they improved by expelling from it the damp, and neceſſarily foul air, they managed to paſs the night in it as well as they could. Early in the morning of the following day, they hied themſelves back to the ſea ſhore, to inform their companions of their good fortune; and bring from the ſhip proviſions, and neceſſary arms; in ſhort, whatſoever it contained which could be uſeful to them for paſſing the winter on this iſland.

It were a more eaſy taſk to conceive the anguiſh of theſe unfortunate beings than to expreſs it, when upon treading back their ſteps to the place where they landed, they perceived nothing but an open ſea, entirely free from the ice, with which it was covered on the preceding day, and to their heavy misfortune no ſhip in ſight. A terrible ſtorm, which happened during the night had occaſioned this dreadful calamity. And whether the pieces of ice with which it was encloſed had broke, and daſhing againſt the veſſel with violence had cruſhed it; whether it had foundered at ſea; an accident which often occurs in thoſe parts; or whatſoever other diſtreſs it had encountered, it never more was ſeen; and as no intelligence reſpecting its company was ever after obtained, it is highly probable they met with ſome miſchance. From this circumſtance, theſe unfortunate men ſaw plainly, that they had no hope remaining of getting from the iſland; and with heavy hearts they returned to the hut from which they came.

Their firſt care and attention turned, as may be naturally imagined, upon their ſupport and ſhelter. The twelve charges of powder which they had, in a little time produced them as many rein-deer, which luckily for them abounded on the iſland.

As the rein-deer is met with in the North of Europe, in Lapland, and in Aſia, in ſimilar latitudes, I conceive I ſhall not be departing widely from my ſubject in giving a deſcription of it.

The rein-deer reſembles the ſtag, and the eland; it is for the moſt part of an aſh grey, although ſome are met with of a reddiſh colour. It is more ſtout and larger than the ſtag, but its feet are ſhorter, and proportionately thicker. Its antlers are whitiſh and plain, and are more branching than thoſe of the ſtag; thoſe of the eland are more like them. When the rein-deer runs, the joints of its feet make a clicking which of itſelf is ſufficient to diſtinguiſh it from the ſtag. The Laplander, the Samoiede, and the inhabitants of a part of Tunguſi, break in the rein-deer, which is called by them as well as in Ruſſia by the name of Olen, and train it to draw them in their ſledges; the Tunguſians call it Oleni. The rein-deer ſerves all the purpoſes of a horſe, is tolerably ſtrong, and poſſeſſes an incredible ſwiftneſs. Its food is moſs, which is found in abundance in all the Northern Countries. Its provender is every where to be met with, and coſts its maſter nothing, it even helps itſelf, digging through the ſnow with its feet to get to its fodder. It has been affirmed that the rein-deer cannot ſubſiſt away from its

its native country; but I can prove this aſſertion to be groundleſs. At Moſcow in the year 1731, I ſaw a dozen of them which were running by the ſide of the houſe of Count Von Goloſkin, at that time grand chancellor, which were kept in his grounds: they were of a reddiſh white colour. In the year 1752, Count Peter Iwanowitch Von Schuwaloff, ſent for two from Archangel; a male, and female. They were fed on moſs. The female was a young one which throve to admiration, and down to the year 1754, was in perfect health. Theſe are matters to which I was an eye witneſs at Moſcow. I cannot tell however what length of time ſhe lived, as I returned the ſame year to Peterſburg. Having finiſhed this ſhort digreſſion, I return to my narrative.

The injuries which the hut ſo luckily diſcovered by the ſailors had received, were very trivial: the planks of which it was built had ſeparated in different places, and requiring to have the chinks filled with moſs, the wind had a free paſſage afforded it. This however was an evil eaſy to be remedied, as they had an axe, and the planks were not decayed. It is well known that in theſe cold climates wood keeps entire for many years, and is not ſubject to be worm eaten. It coſt them but little trouble to join the planks together again, and with the moſs which was found in abundance on the iſland, they readily filled up every crevice; this practice is generally followed in compleating houſes conſtructed of wood. Theſe men relieved themſelves from this inconvenience without embarraſsment, the more ſo from its being the cuſtom as is well known, for the Ruſſian peaſants to build their own dwellings: they are conſequently expert in the uſe of the axe.

The cold in theſe climates is inſupportable, and the earth itſelf produces no trees; not even the ſmalleſt buſh. This want of wood our unfortunate adventurers had remarked on looking round the iſland on their arrival, and they were under apprehenſion of periſhing of cold. Their good fortune however favoured them; the pieces of a ſhip which had been wrecked, were thrown on the coaſts of this iſland; an accident which furniſhed them with wood enough to carry them through their firſt winter. Nearly the ſame aſſiſtance was to be ſent them the following year, this affording them no more than an advantageous variation: the waves of the ſea continually throwing on ſhore entire trees with their roots, without their being able to divine from what country they were brought. This circumſtance will not appear incredible to thoſe who have taken the pains to inform themſelves of what different writers have related on this ſubject; who notice its frequency, whether on our wintering at Nova Zemla, (not Zembla as we ſhall prove,) or in lands of other latitudes farther towards the North.

I break in on my narrative to obſerve that it ſhould be called not Nova Zembla, but Novoia or Nova Zemla, which ſignifies new earth, or new land, the Ruſſian term conveying both theſe meanings; and under this name when ſpoken of, it is known in Ruſſia.

Nothing aſſiſted theſe ſailors during the firſt year of their exile, ſo much as a board to which was fixed a long iron hook, and a nail four or five inches long, and proportionately thick; as well, another board to which was faſtened different old iron work, the ſad remains of ſome veſſel which had been loſt in this wide extended ſea. This unexpected aid arrived at a time when they had nearly expended their powder; when the fleſh of the rein-deer which they had ſhot was almoſt all conſumed; and they had no other proſpect than that of periſhing with hunger. A ſecond piece of good fortune befell them, little leſs valuable than the firſt: they found on the ſea ſhore the root of a fir tree which was nearly in the ſhape of a bow.

Neceſſity

Neceſſity was ever the mother of invention. They took for granted, that, by the means of their knife, they ſhould be enabled to faſhion this root into a complete bow; and effectively they compaſſed their purpoſe.

But the difficulty was to find a cord to ſtring it, and arrows to ſhoot with. They deliberated on this circumſtance, and concluded upon making two iron headed ſpears for defending themſelves from the white bears, which are more fierce than the generality of their ſpecies; an attack from them being the only moleſtation they had to apprehend: the making of arrows and contrivlng a chord to ſtring their bow were put off to a future period. To make a hammer for working the iron into lances and arrows, was no great atchievement for them; every one knows they might find a way to effect this purpoſe, and furniſh themſelves with the tool.

The iron hook which I have noticed they found faſtened to the board thrown on ſhore, had a pretty conſiderable hole in it, about two or three inches from the end oppoſite to the head. The head was round and thick, ſuch as in ſimilar hooks is commonly made for their protection. They contrived to heat red hot the end which had an orifice, and enlarged it by forcing into it the nail which they had met with: this they effected with a few ſtrokes of the axe on the part, about five inches from the hole which was to be made larger; by another blow they drove in the hot hook, a piece of rounded wood which ſerved for a handle, and thus became poſſeſſed of a hammer. To complete their forge, they pitched upon a large ſtone for their anvil, which they had to remove from its place: on this occaſion, two rein-deers' horns or antlers ſerved them for ſlings. With theſe tools they forged themſelves two lances' heads, which they poliſhed and pointed ſharp with ſtones: theſe they bound as firmly as poſſible by the exertion of all their might, with thongs made from the ſkin of the rein-deer, to ſtocks of the thickneſs of one's arm, made of the branches of trees, which they found caſt on ſhore by the ſea. When a man has reſolution, he may with ſuch a ſpear (you may call it a pike or halbert if you will,) attack a white bear, although he runs imminent danger of being killed. As ſoon as they had made themſelves maſters of one of theſe frightful beaſts, the made its fleſh ſerve them for food; and they found it much more agreeable to the taſte than that of the rein-deer: the truth of this circumſtance I have been aſſured of by many with whom I have ſpoken on this ſubject.

Upon examining the nerves and fibres of this bear they remarked with indeſcribable delight, that they were diviſible with the leaſt trouble into threads as thick or as fine as they pleaſed. I have myſelf made this experiment, which I ſhall hereafter notice. This diſcovery was one of the moſt happy events that could have befallen them; beſides other advantages which they might derive from it at a future period, it furniſhed them immediately with a cord for their bow. With this they killed all the rein-deer, and blue and white foxes, they had occaſion for during the whole time of their ſtay upon the iſland, theſe ſerved them for food, for medicine, and for raiment, protecting them from the inſupportable cold which reigns in theſe latitudes, ſo contiguous to the pole.

The great ſucceſs which our iſlanders met with from the uſe of their lances, enlivened them much, and induced them without delay to forge four iron heads for arrows: theſe were completed, but made ſmaller than the firſt: they heated and ſharpened them as they had done the former, and bound them with thin threads made of the nerves of the bear, to ſhafts of fir, through ſlits in which they inſerted feathers which they found, faſtening them with very fine fibres. Their ingenuity profited them ſo far, that in the courſe of the time of their remaining on the iſland, by means of theſe arrows, they killed two hundred and fifty rein-deer, beſides a conſiderable number of blue

blue and white foxes. The latter are called Peſtzi in Ruſſia, on account of their ſtrong reſemblance to a kind of Iceland dog, which the German ſhepherds uſually have for guarding their ſheep: the word *pes* ſignifying a dog in the Ruſſian tongue.

When they ventured themſelves againſt the white bear, of which in all they killed ten, they ran great riſk of their life. Theſe wild animals are poſſeſſed of uncommon ſtrength, and defend themſelves with extraordinary obſtinacy; ſo that, excepting the firſt which I have mentioned, they never deſignedly encountered them: the nine others were killed in their own defence when attacked by them: ſeveral of theſe had even proceeded as far as into the entrance of the hut to tear them in pieces. It is true, all theſe wild animals did not ſhew the ſame courage, if I may ſo expreſs myſelf, whether from being leſs excited by hunger, or leſs furious by nature; ſome of them running away at the cries which the men made while preparing themſelves to drive them back. Nevertheleſs their different attempts occaſioned theſe poor men unſpeakable inquietude: they never ventured to any diſtance alone, nor without being armed with their lances to protect them from the violence of the bears; being continually under apprehenſion of being devoured by them. Theſe three deſcriptions of wild animals were the only food of our iſlanders during the whole of their ſtay in that deſert country.

Men do not reflect upon all their means at once: it is commonly the need of a thing which opens their eyes, and impels them to think of expedients which otherwiſe would not have been conceived. The juſtneſs of this obſervation was more than once experienced by our ſailors. During a long period they were under the neceſſity of eating their meat almoſt raw, without ſalt, the want of which they felt ſeverely, and without bread. The immoderate cold of theſe climates, and the few conveniences the poſſeſſed, did not allow them to cook their victuals in a proper manner: in their hut they only found a ſtove of the Ruſſian faſhion, and conſequently of a deſcription which could not ſerve for making a kettle boil. On the other hand, wood was much too precious to them to keep up two fires, and were they to kindle one without the houſe, it would not ſerve to warm them, a matter of the higheſt importance in ſuch a rigid clime. Finally, the continual dread of expoſing themſelves to the white bears hindered them from cooking in the open air. I ſhall now make one remark. Allowing that in ſpite of the beforementioned impediments they ſhould have attempted this meaſure, it would yet have been impracticable throughout a great part of the year: and certainly, the exceſſive cold which almoſt always reigns in theſe regions, the long abſence of the ſun, which leaves them for months enveloped in complete darkneſs, the inconceivable falls of ſnow, which take place at certain periods, and the long duration of the rainy ſeaſon at others; theſe circumſtances muſt have ſoon obliged them to change their intention, even ſhould they have reſolved upon it.

How then were they to remedy the inconvenience of being obliged to eat their meat almoſt raw? Their ingenuity pointed out the place to them of ſuſpending it from the roof of the hut. In the deſcription of it, I have obſerved that every day it was filled with ſmoke from the height of a ſitting perſon to the top. Now this was actually a ſmoking chamber; then they hung their meat on wooden pegs, faſtened on the outſide of the upper part of the roof of their hut, ſo that their foes the bears could not reach them: there they left it the whole ſummer through, expoſed to the freſh air, and the wind: it dried extremely well, and ſerved them in lieu of bread, making them reliſh their other meat which was but half cooked. After they had made this experiment, and it had ſucceeded ſo much to their comfort, as to ſatisfy their fulleſt wiſhes; they ever after continued the practice of it, and increaſed their ſtock of proviſion as much as they were able.

It

It may be inquired how came they by this idea? The anſwer is eaſy. There are few countries in which it is not uſual to ſmoke hams, and geeſe, as well as different ſorts of fiſh, and in Ruſſia the practice is common of drying ſalmon, ſturgeon, and other of ſimilar kind in the ſun; which on faſt days, and during the great faſt, are ſerved up on table without the leaſt preparation.

After ſpeaking of their meat, I muſt now give a ſhort account of their beverage. The water which they obtained from the rivulets that ſtreamed plenteouſly from the rocks of this iſland, quenched their thirſt in ſummer; and the ice and the ſnow, which they melted during the winter, ſerved them for drink through that part of the year when they were confined to their hut. I muſt not however forget to notice that their little kettle was the veſſel in which they fetched their water, and out of which they drank.

The ſcurvy is a malady to which ſeamen are commonly ſubject, and is more dangerous in proportion to an approximity to the pole; whether the cauſe be attributable to the cold, or to any other unknown circumſtance. Let that be as it will: theſe unfortunate men, ſhould they be attacked by this diſorder, were without aſſiſtance, they therefore bethought themſelves of a means which ought not to paſs unnoticed, reputedly a ſovereign preventative of this diſagreeable complaint. It was Iwan Himkoff who had paſſed the winter ſeveral times on the weſtern coaſt of Spitſbergen, that made his companions acquainted with this remedy. He inſtructed them to eat raw and frozen meat cut into ſmall pieces, and drink the warm blood of the rein-deer, extracted from the animal as ſoon as killed, and that as often as the carcaſes could be obtained; and, laſtly, to eat as much as poſſible of cochlearia (ſcurvy graſs), the only graſs which grew on the iſland, and that but ſparingly. It is for the faculty to determine, if theſe ſmall pieces of raw and frozen fleſh, and this warm blood of the rein-deer, be fit for the cure of the ſcurvy. Might not exerciſe be concerned where this preſcription was followed by thoſe who were threatened with this diſorder, or upon whom it had made its appearance? Again, no one is ignorant that cochlearia is a powerful antidote againſt the ſcurvy. However, be this as it may: experience, in this inſtance, illuſtrated the powerful influence of the preſcriptions adminiſtered: three of the ſailors who made uſe of this regimen were kept entirely from this complaint. As often as they hunted down a rein-deer or a fox, as conſtantly they drank its blood. Iwan Himkoff, the youngeſt of them, had acquired ſuch ſwiftneſs of foot at this exerciſe, that he could leave the faſteſt horſe behind, a circumſtance to which I have been an eye-witneſs. The fourth, called Feodor Weregin, had at all times an unconquerable averſion to the blood of rein-deer, he was very heavy and very idle, and returning to the hut as ſoon as poſſible when obliged to make excurſions. From his firſt arrival upon this iſland he was menaced with this calamity, and in courſe of time the malady had made ſuch progreſs, that he was ſubject to a dreadful weakneſs, accompanied by cruel ſufferings. During the laſt year of his life he was bed-ridden, without ſtrength enough to raiſe himſelf up, and without the power of moving his hand to his mouth; the companions of his misfortunes being obliged to nurſe him the ſame as a new-born child *.

In

* Although I have my doubts as to the efficacious operation of pieces of frozen and raw fleſh cut ſmall, and the drinking of the warm blood of newly killed rein-deer, as a remedy for the ſcurvy; it yet appears to me that theſe things are worthy of notice. I certainly have found in the firſt volume of a book entitled, "Voyages and Diſcoveries of the Ruſſians along the ſhores of the Frozen Ocean and the Eaſtern Sea, as well as towards Japan and America, publiſhed by Müller," that the inhabitants of northern Siberia make uſe of frozen fiſh, which is eaten raw, as a remedy for that ſhocking diſorder, and that it is effectual." Vide page 194, 195. "Our men dug out their reſidence for the winter at the mouth of the river Chotuſchtach. Here the ſcurvy began to affect our ſhip's crew; but they were benefited by uſing a decoction

In the beginning of my narrative I have obſerved, that our ſailors brought a ſmall ſack of meal, about twenty pounds weight with them to the iſland, I ſhall now notice the uſe to which it was put.

Soon after their arrival they abandoned the uſe of this food, deſiſting when they had cooked the fleſh of the rein-deer which they had killed; preſerving thus about the half of it. This remaining quantity they put to a ſervice at leaſt as neceſſary as that to which the former part had been applied. I ſhall proceed to deſcribe it.

They readily ſaw that, while in ſo cold a climate, they muſt continually keep up a fire, they would have very few means for kindling it after thoſe ſhould be conſumed which they poſſeſſed; it is true, they had ſtore of fire-wood, but little touchwood or tinder. The barbarous nations in the wilds of America have diſcovered a method of lighting a fire whenever they will: it conſiſts in the friction of a ſquare piece of hard wood againſt two pieces of ſofter wood, which are faſtened to it; while the two ſoft pieces are preſſed between the knees, the middle hard piece is milled by the hands with great velocity, ſo that by the friction, a heat is occaſioned which ſhortly cauſes ſmoke, and quickly ſucceeding flame is excited *.

Our ingenious ſailors had little knowledge of this American cuſtom; but they knew that when two pieces of dry wood, one of which being ſoft, and the other hard, are

of cedar ſhoots, which tree grows here to a ſmall height, and after the manner of the country by taking raw and frozen fiſh, which they powdered and ate. By theſe means, and by keeping continually at work and in hourly exerciſe, moſt of them got relieved and reſtored to health.

"Poſſibly the cure of theſe ſick men is aſcribable alone to their exerciſe and the balſam contained in the cedar ſhoots; this is nothing other than a turpentine ſerving to purify the blood: however it appears from this that theſe nations make uſe of raw and frozen fiſh, as a remedy for this complaint, and I mean to obſerve this alone."

The author noticed before ſpeaks of blood as an antiſcorbutic (ſee page 205 to 206,). "On ſuch an occaſion" (that of preventing and healing the ſcurvy,) he ſays, "we may take a precedent from the Ruſſians of Archangel, ſome of whom paſs almoſt every year the winter in Nova Zemla without being incommoded with this diſorder; imitating the Samoiedes in drinking frequently the blood of the freſh killed rein-deer."

Now, one remark. Upon my reading this narrative to Mr. S. Batigne, before I gave it to the public, he, on this occaſion, obſerved, that he gave credit to the efficacy of the blood of animals being drunk while warm, as well for preventing as even for remedying this diſorder; its volatile nature being calculated to hinder the juices of the body from becoming clammy and thick, and to correct them when in that diſpoſition, in ſuch as would make the trial. This malady proceeds from a want of due circulation of the fluids, which when diſordered communicate their bane to the whole maſs of blood. He grounded his opinion, as well as on other circumſtances, upon the practice ſo common in voyages to America, in which, when the crew of a veſſel is attacked by the ſcurvy, they make for one of the Turtle Iſlands, called ſo, from the number of theſe animals found upon them; when the ſick eat plenteouſly of that food, which, from the quantity of blood it contains, and that of a balſamic nature, is the moſt preferable of all remedies.—On this ſubject I ſhall myſelf remark a cuſtom which prevails in the neighbourhood of the Alps, and in other places. When perſons are afflicted with pleuriſies, or other complaints ariſing from the want of the proper circulation of the fluids, they are accuſtomed to drink the blood of the mountain goats. Although this blood be of a hot nature, it yet produces favourable conſequences, from the volatility of its parts; exciting remarkable tranſpiration, and promoting ſweat.

* See what Father Labat ſays in his new voyages to the American Iſlands on this ſubject, when treating of the Caribbees.

"I muſt obſerve in addition, that this is not the only mode of kindling fire which is practiſed by the Americans: ſome among them have a particular inſtrument appropriate to this ſervice. It is to me an object of ſurpriſe, that the inhabitants of Kamſchatka uſe the ſame inſtrument." (Vide the before-cited work of Müller, page 257.) The learned author then obſerved another place, where ſome Americans were taking their dinner, but who fled on his approach. He found, on proceeding to the ſpot, an arrow, and an inſtrument for kindling fire, faſhioned in the ſame manner as thoſe uſed in Kamſchatka. In his remarks, he ſays, "It is a board with ſeveral holes; with a ſtick, one end of which a man thruſts into one of theſe holes, while he mills the other end between his hands; and from the quickneſs of the motion cauſes fire. They then apply the ſparks to any kind of matter of quick combuſtion."

violently rubbed againſt each other, the latter takes fire. This as well being the mode in which the Ruſſian country people produce fire when they are in the woods, and a holy ceremony practiſed throughout all the villages wherein there is a church; they could not conſequently be ignorant of. Probably it may not be unacceptable to thoſe who have never heard a deſcription of it, my giving an account of this ceremony.

The eighteenth of Auguſt, old ſtile, is called by the Ruſſians Frol y Lavior: theſe are the names of two martyrs inſerted in the Romiſh calendar, Florus and Laurus; on the twenty-ninth of the ſame month laſt year, on which day is kept the faſt of the beheading of St. John the Baptiſt. On this day the Ruſſians lead their horſes round the church of their village, beſide which on the foregoing evening they dig a hole with two mouths. Each horſe has a bridle made of the bark of the linden-tree. The horſes go through this hole one after the other, oppoſite to one of the mouths of which the prieſt ſtands with a ſprinkler in his hand, with which he ſprinkles them. As ſoon as the horſes have paſſed by their bridles are taken off, and they are made to go between two fires that they kindle, called by the Ruſſians Givoy Agon, that is to ſay, living fires, of which I ſhall give an account. I ſhall before remark, that the Ruſſian peaſantry throw the bridles of their horſes into one of theſe fires to be conſumed. This is the manner of their lighting theſe givoy agon, or living fires. Some men hold the ends of a ſtick made of the plane-tree, very dry, and about a fathom long. This ſtick they hold firmly over one of birch, perfectly dry, and rub with violence and quickly againſt the former; the birch, which is ſomewhat ſofter than the plane, in a ſhort time inflames, and ſerves them to light both the fires I have deſcribed.

To return to our iſlanders. It is inconteſtible that they were acquainted with the givoy agon, and of the means for making it; but why did they not adopt the ſame plan? They had no other wood than fir, a moiſt wood of itſelf, and that moreover furniſhed them by the ſea. What were they to do if once their fire became extinguiſhed? One readily ſees a remedy ſhould be provided. In walking through the iſland they had remarked that in the middle there was ſome fat earth or clay. They conceived the idea of making themſelves a veſſel of it, that might ſerve for a lamp, which they might ſupply with the fat of the rein-deer they had killed, and with that of thoſe they ſhould kill in future. This was certainly the moſt reaſonable meaſure they could adopt. What could they have done without light during the winter, which in this latitude has one night of ſome months duration? They procured therefore ſome clay, and made a ſort of a lamp therewith, this they filled with rein-deer's fat, and ſtuck a piece of twiſted linen in it to ſerve as a wick; but they perceived with grief that the fat penetrated the veſſel as ſoon as it melted, and dropt from it on every ſide. They had now to ſeek a remedy for this misfortune, ariſing from the pores of the veſſel being too large. This they quickly found. They made themſelves for this purpoſe a new one, which firſt they ſuffered to dry well in the open air, and afterwards heating it red-hot in a glowing fire, they cooled it in the kettle wherein was a quantity of meal they were about to cook, ſo that it received conſiſtency from the thin ſtarch. As ſoon as the lamp had cooled, and they had filled it with melted fat, to their great joy they perceived that it did not leak; but for their greater ſecurity they dipped ſome rags of the linen of their ſhirts in the before-mentioned ſoddened meal, and placed them round their lamp. From the ſucceſs of this eſſay, they reſolved on being careful of the remainder of their meal. As they were very fearful leſt ſome unlucky accident might befall their lamp, they had the foreſight to conſtruct another, that at no time they ſhould be in want from any caſualty happening.

Poſſibly it may be aſked, where did they find wicks for trimming their lamps? The anſwer is at hand. On the wreck of the ſhip, which they had collected with much labour for warming them in winter, was ſome cordage found, and a ſmall quantity of hemp, the produce of old ropes, uſed on board ſhip for caulking, or forcing with ſtrength between the planks, to prevent leakage. When this was expended, they ſubſtituted, what they but ſeldom wore, the linen of their ſhirts and drawers. All who are acquainted with the Ruſſian coſtume, know that there are few among them but what wear drawers; few of the country people wear any other hoſe. With this hemp, and this part of their cloathing, which among the common people is of a very coarſe quality, did they twiſt wicks; and from the time of their completing their firſt lamp, to the inſtant of their going on ſhip-board again, to return to their native land, they were never without this light burning in their apartment.

The neceſſity in which they found themſelves of appropriating ſuch an eſſential part of their cloathing as their ſhirts and drawers to this purpoſe, was reparable by their employing the ſkins of the deer which they had killed in the ſtead, ſufficiently adequate in itſelf as a ſubſtitute had they no other cloathing, a caſe which happened ſhortly to be theirs. Without mentioning other things which they were in need of, they ſaw their ſhoes and boots were worn out, and had no more: they were now but little removed from the violent cold of winter, and muſt again have reſource to that ingenuity which ſeldom leaves men when neceſſity calls for its being employed. They poſſeſſed a quantity of ſkins of the rein-deer and the fox, which ſerved them for bedding and cloathing, and contrived to dreſs them. This is the method in which they manufactured them.

They ſoaked theſe ſkins in ſoft water, and left them remaining in it for a day; afterwards, with very little pains, they ſcraped off the hair, and rubbed the leather, now moiſtened through, between their hands until almoſt dry; they then ſmeared this over with the melted fat of the rein-deer: they repeated this, rubbing it as before. This contrivance made the leather ſoft, pliant, and in ſhort ſo flexible, as to be fit for any uſe to which they might chooſe to apply it. As for thoſe ſkins laid aſide for the purpoſe of making themſelves peliſſes, they were ſatisfied with letting them ſoften for one day only in manufacturing them, proceeding afterwards in the ſame manner as I have before deſcribed, excepting their not tearing off the hair. Thus they ſaw themſelves at once poſſeſſed of all the materials neceſſary for cloathing themſelves from top to toe.

Yet, however, one great difficulty remained to be overcome. They had neither awl to make their ſhoes and boots with, nor needle to ſew their cloathing; but they had iron, as we have noticed, and found out means very ſoon of remedying this need: in ſhort, they forged as uſeful an awl and needle as thoſe which are uſed by workmen in theſe lines of buſineſs. It was in the beginning difficult for them to contrive how to make the requiſite hole in the needle, although at laſt it was compaſſed by the means of the point of their knife, which for this purpoſe they ſharpened and made proper, after having previouſly forged a ſort of wire for a needle, and heated it red-hot. I have had an opportunity of convincing myſelf of the truth of all I have ſaid on this matter. I have attentively examined, through a common magnifying-glaſs, the eye of this needle. The mode they uſed of rounding, poliſhing, and pointing it, ſo as to be very ſharp, was by rubbing it on ſtones, of which there was an abundance: the only fault that it had was in that the eye not being ſo uniform and even as it ſhould be, it was liable to cut the nerves with which it was threaded; but this was a failing they could not remedy.

Although unfurniſhed with ſheers, for the purpoſe of cutting the hides, yet were they not without a ſubſtitute perfectly ſufficient for this uſe, in the knife which they had ſo

well ſharpened. Thus although they ſhould not have been tailors nor ſhoemakers, it appears that theſe unfortunate men muſt have become ſuch in this incomprehenſible ſtate of embarraſſment; ſince they manufactured hoſe, ſhirts, waiſtcoats, cloaks, or peliſſes, boots, ſhoes, in ſhort, every deſcription of cloathing of which they had occaſion, whether for winter or for ſummer. Then they had, which accounts for it, patterns of all theſe things, the peliſſes excepted, before them: with theſe, induſtrious and ingenious as they were (which will eaſily be allowed of them from what has gone before), they had little difficulty in ſewing together the ſkins and hides according to meaſure; a practice to which they were accuſtomed. With reſpect to thread for ſewing the ſkins together, they had to provide for this, and quickly accompliſhed the means; the nerves or ſinews of the rein-deer and bears were divided into thin or thicker threads, as they found moſt to their advantage; and with this laſt contrivance they completed all that was neceſſary for putting them in condition of withſtanding the inclemency of the weather.

In ſummer they were clad in ſlight undreſſed ſkins: in winter they were dreſt like the Samoiedes and Laplanders, with long peliſſes of the untanned ſkins of rein-deer and foxes. Theſe peliſſes had a hood ſomewhat like that of the capuchins, but protecting more the neck and head: it was all of one piece, with an opening before for the face remaining uncovered; ſo that the peliſſes mentioned being entire, on laying them aſide they were obliged to draw them over the head like a ſack. Separate from the diſcontent which this loneſome life engenders, and particularly when conſtrained; and were it not for the reflection which each of them could not refrain from making, of the poſſibility of his ſurviving his companions, and conſequently ſtarving to death, they poſſeſt comforts ſufficient to content them, the pilot or boatſwain however excepted, who had a wife and three children: he thought (as he himſelf has confeſſed to me) every day on his return to them, and bewailed continually the diſtance which ſeparated him from his family. It is fit, however, that I ſhould now begin the deſcription of the iſland itſelf, and recount what this unfortunate inhabitant related to me reſpecting it.

This iſland laid down by Gerard Van Keulin, and by John Peter Stuurman in his corrected chart of the northern part of Europe, by reference, will be ſeen to lye between latitude 77° 25′ and 78° 45′ N. under the name of Eaſt Spitſbergen, called by the Ruſſians, Maloy Broun; and conſequently, partly in the thirteenth, and partly in the fourteenth * Climate: whence it follows that the greateſt length of day-light in the year will be of four months continuance, that is to ſay on the ſide of the iſland oppoſite to that inhabited by our adventurers. In the before cited chart the iſland is laid down as deſcribing a pentagon. Its greateſt length from Eaſt to Weſt, being twenty-three German miles, and its breadth from North to South twenty-two. As I had forgotten to queſtion our iſlanders themſelves upon the ſize of the iſland, I was obliged in

* The author alluded to in any ſuch diviſion of the globe, as ſhould make the ſpace lying between latitude 77° 25′, and latitude 78° 45′ to fall in the ulterior part of the thirteenth, and beginning of the fourteenth climate, does not appear. The table computed by Ricciolus, which is that in higheſt eſteem, divides the globe into twenty climates N., and as many S., that is to ſay, ſeven from the Equator to 48° 15′ each, having the day in northern latitudes half an hour longer than the preceding; ſeven from latitude 48° 15′ to 65° 54′, each having the day one hour longer than the preceding, (in this latitude from the refractions of its rays which are computed in the table of Ricciolus, the ſun is ſeen on the twenty-firſt of June without ſetting, forming its circuit above the horizon, which circumſtance, but for this refraction, would not be viſible more South than latitude 66° 30′;) and ſix climates in each the day of one months longer duration, than in the preceding, beginning at latitude 65° 54′, and finiſhing at the pole. By this table the eighteenth climate begins in latitude 72° 6′, that of the center of the Iſland according to the above noticed latitudes, and the longeſt day, in that latitude, is compoſed by him of one hundred and twenty-four days continuance, the longeſt night of one hundred and ſeventeen days length.—*Tranſlator.*

order

order to be able to ſpeak with certainty of it, to avail myſelf of the chart which was laid before them, after their return to their native country: they found out of themſelves their place of exile, pointed out the ſpot on which their hut had been erected, and marked it with a ſtroke of a pen upon the map, which was returned to me at Archangel.

A proof that they had not deceived themſelves from a knowledge of this iſland is evident from what Mr. Vernezobre, mentioned already in the beginning of my narrative, writes to me. He ſays in his letter of 15th of November, 1756. "The captain of a galliot called the Nicholas and Andrew, belonging to Count Peter Iwanowitch Von Schuwaloff, paſſed in the winter of 1749 on Maloy Broun. He landed ſhortly after the departure of our ſailors, and diſcovered the hut which had ſerved them for a dwelling, and noticed on a wooden croſs, erected before the door by the pilot Alexis Himkof; an inſcription giving the name to the Iſland of Alexeyiewſkoi Oſtrow, that is to ſay, Alexis Iſland." I muſt now remark a circumſtance contained in this letter which ſhews that the iſland muſt be of tolerable extent: "Certain Samoiedes hearing of the adventures of our ſailors, and this country being ſuitable to them above all others, requeſted to ſpeak with Mr. Vernezobre; they wiſhed to be permitted to inhabit it, and to be tranſported thither without reward, themſelves with their wives, their children, and their rein-deer."

Before I enter into a detail on the nature of this iſland, it may perhaps not be out of place to make the following remark. Some authors have advanced that the country known by the name of Nova Zemla, is not properly ſpeaking an iſland, or, as others maintain, a part of our continent, but only a heap of ice, held up and collected together in the lapſe of time, which travellers have repreſented as an iſland. The ground on which they build their aſſumption is this among others: when (they ſay,) men dig to the depth of one or two feet through the ſtratum of earth, which the wind has blown over here from the coaſt of Aſia, nothing but ice is found below.

I can not undertake to decide in this matter: this has no relation to my ſubject: I have not read the authors who have publiſhed their ſentiments in ſupport of, or in oppoſition to, this hypotheſis. I am content with obſerving ſimply that the iſland Eaſt Spitzbergen, of which I am treating, muſt be looked upon indiſputably as real land, according to the repreſentations made to me by theſe ſailors.

They found, as they told me, many mountains and craggy rocks of an aſtoniſhing height, continually covered with ice and ſnow. They did not meet with the ſmalleſt tree, nor even the moſt diminutive buſh, the Cochlearia excepted, which was very ſparingly found. No graſs grew, on the other hand moſs was ſeen in abundance every where. In the middle of the iſland they diſcovered ſome fat earth or clay, whence it is probable that ſome perſons have conceived that there were ice mines in this place, or that this itſelf was formerly nothing elſe: it is not impoſſible were they to go and dig there, that they would ſhortly get to the ice. They certainly had no rivers although they never wanted water: but a number of ſtreams flowed at all times from the mountains and rock, ſupplied from abundant ſources. Beſides flint ſtones which were common, the iſland furniſhed a kind of ſtone proper for burning for lime. This ſtone produced here on the ſurface of the ground, in other countries is uſually dug from quarries: (it is cuſtomary in Ruſſia to burn lime, and lay the floors of their houſes with it,) I ſhould have taken the ſtone to have been hewn, were it not for the circumſtance of its ſpliting like ſlate after long expoſure to the air, and being ſeparable like ſlate into ſcales. This kind of ſtone is called, by the Ruſſians, *plit*. To conclude, at the ſea ſide of the iſland, the ſhore, is covered with ſand and gravel, which continues ſome little diſtance towards the interior.

I had

I had the precaution to learn from the ſailors whatever I have yet deſcribed. It was natural as well that I ſhould be curious enough to queſtion them reſpecting the length of continuance of the ſhining of the ſun, and its abſence; as alſo concerning the temperature of the air, and the different changes in it which they had remarked: in ſhort I enquired of them reſpecting all the phenomena obſerved by them, during their unpleaſant ſtay on this iſland.

Upon my putting to them the queſtion, at what time the ſun began to appear above the horizon? They anſwered me: it appeared the beginning of the great faſt*. This anſwer did not however deſignate any particular day: the time of the faſt changing always according to Eaſter's falling early or late. Simple country people, unacquainted with the mode of computing for Eaſter, and who poſſibly had never remarked the circumſtance of this feaſt happening ſometimes earlier, ſometimes later; ſuch were not conſequently competent to ſatisfy me on this point.

The day they began to perceive the ſun ſhew itſelf, revolving entirely above the horizon, was the feaſt of St. Athanaſius, which happens on the ſecond of May old ſtile, or the twenty-firſt of April, according to the Gregorian Kalendar †. They told me farther that it circulated thus to their obſervation for ten or eleven weeks. If the

* As it appears in the courſe of the narrative, that the ſailors by ſome means kept ſuch good reckoning of time, as to err only in two days, or owing to their having omitted the additional ones in the two leap years which occurred, ſay four days; is it unreaſonable to imagine that they would bear in mind the period at which Eaſter was kept in the year of their departure from Archangel, and conſider it as fixed on the ſame day in the ſucceeding year? If we grant this, as Eaſter-day in the year 1743, fell upon our third of April, according to the Julian Computation for Eaſter, Lent would conſequently begin on the twentieth of February, and if that day be the one on which the ſun was ſeen to emerge firſt from below the horizon, it will differ from the table of Riccioli, which calculates for the refraction of light, by only two days; the time it ſhould be firſt ſeen according to that, in this latitude, being the eighteenth of February, and it may fairly be preſumed that unacquainted with the length to which their wintry night would extend, and keeping in their hut at much as poſſible during the ſevere cold of that ſeaſon, they might have miſſed the firſt actual appearance of the ſun, and that for the two days which make the whole difference. *Tranſlator.*

† The date here deſcribed at which the ſun was ſeen to complete its revolution above the horizon, is as near correct as could be expected. By computation of Riccioli, before adverted to, it ſhould happen on the twentieth of April. As to the period of its ceaſing to ſhine, the account of its being but ten or eleven weeks, is incorrect. It would have appeared for as great a length of time above the horizon after the ſolſtitial day, as before, and conſequently would have ſhone for nearly eighteen weeks, inſtead of ten or eleven, viz. from the twentieth of April until the twenty ſecond of Auguſt, N. S. The calculation of the perſon to whom M. Le Roy referred for information is alſo incorrect. The refraction of the rays of the ſun by the atmoſphere cauſes it to be viſible above the horizon before it be actually riſen, and makes it appear ſome time after its ſetting; ſo much ſo, as to make a material difference in the length of its appearance in a latitude ſo much to the north, a matter not calculated by him. The computation afforded to M. Le Roy, and that of Ricciolus, which is conſidered correct, I have given below.

	Length of appearance.	Length of diſappearance.
By M. Le Roy's friend	119	111
By Ricciolus	124	117

Reſpecting the time of the firſt appearance of the ſun above the horizon, it is poſſible from its being ſo much deſired, it would have impreſſed itſelf upon their minds. The novelty of its revolution above the horizon, or rather a curioſity of aſcertaining how long it happened before the time ſuch an occurrence takes place at Archangel, might have made them more particular in noticing this date, the day of its diſcontinuing to revolve wholly viſible being of minor intereſt, ſince it yet had to ſhine for a great part of the twenty-four hours for a long while, was not ſo carefully attended to. The real time at which, from computation, it would ceaſe wholly to be viſible would be the twenty-fourth of October. They ſtate this to have been the caſe on the twenty-ſixth of October, O. S., which is the fifteenth, according to our kalendar. May not their ceaſing to ſee the ſun ſo long as nine days before the time at which it ſhould have been wholly inviſible to them, have been occaſioned by the great fogs which in the autumn ſo conſtantly prevail in theſe latitudes, according to the various accounts of all thoſe who have proceeded ſo high towards the north? With theſe allowances made, and this doubt granted in their favour, they will appear to have been as correct as men in their circumſtances of life could poſſibly be expected to have been.—*Tranſlator.*

latter

latter period of time be taken which from the ſituation of the iſland muſt be the neareſt to truth; the time of its beginning to ſet, will thus be fixed according to them upon the ſeventh of July. From theſe the ſun began to ſet every day, until the feaſt of St. Demetrius: On that day it ceaſed to ſhine entirely.

This account of our Iſlanders is not correct. Upon conſulting a perſon well informed on theſe matters, I was given to underſtand that provided the iſland, upon which they were, had been ſituated in 77½° of latitude, as it is deſcribed on the chart, the ſun would have been ſeen for the firſt time upon the fourth of February, would revolve above the horizon from the eleventh of April until the eighth of Auguſt, and would entirely diſappear upon the ſixteenth of October.

It is poſſible theſe poor fellows may have erred as well with reſpect to the duration of the ſun's appearance and diſappearing, as to the time of its revolution above our horizon, from their being deſirous of aſcertaining them by the feaſt days of the church; and as will be gathered from what follows, they were as well greatly in error, in regard to the date of their return from this iſland.

It was the fifteenth of Auguſt, old ſtile, the feaſt of the Holy Virgin Mary, when the veſſel, which brough them back to their native country, arrived at this iſland. But our worthy ſailors who had made preparations in as good a manner as they were able to keep this high holiday, reckoned the feaſt two days later, and conſequently eſteemed that day to be the thirteenth of Auguſt. A miſtake of ſmall conſequence, which might ariſe from accountable cauſes, ſeeing that they for four months together had the ſun revolving above the horizon during the ſummer, and in winter ſpent nearly an equal time in utter night and darkneſs: beſides the weather being ſo gloomy and cloudy at times; and the rainy and ſnowy ſeaſons depriving them of the ſight of the ſtars. It is natural for the reader to enquire, how theſe men, who had neither clock, nor watch, neither ſun, nor moon dial, could reckon the natural days whilethe ſun continually ſhone, and more particularly at that time when it was no longer viſible? I did not neglect to interrogate them on this ſubject. The boatſwain hurt at my queſtion anſwered me with ſome emotion, "What ſort of a pilot ſhould I be if I were ignorant of the method of taking an altitude of the ſun, when that planet were viſible? Or if I knew not how to tell by the courſe of the ſtars, in the abſence of the ſun, what were the fit hours for bed time, out of the twenty-four? I had made myſelf for this uſe a proper ſort of ſtaff, ſimilar to that which I had left on board our ſhip, and which ſerved me to take my obſervations by." I conceive the inſtrument which he mentioned to me on this occaſion, was what is called a Jacob's ſtaff, or one ſomewhat reſembling it.

The moon is viſible as they informed me in this country during the winter for nearly two months together, and riſes higher in proportion to the days becoming ſhorter. I leave to Aſtronomers the taſk of criticiſing this appearance, contenting myſelf with relating ſimply their depoſition*.

* A ſimilar example of the revolutions of the moon above the horizon in the abſence of the ſun, remarked by the Dutch in 1576, who wintered at Nova Zemla, in 76° of latitude may be ſeen in the third voyage of the Dutch to the North. p. 66, 67.

"On the firſt of November, during the twilight, we ſaw the moon riſe in the Eaſt, the ſun being yet perceived tolerably high above the horizon. On the ſecond, the ſun was ſeen to riſe in the S. S. E, and ſet nearly in the S. S. W.; but the whole of its globe did not ſhew itſelf, being obſerved only in the horizon with a part beneath. On the third, it roſe in the S. E. by S., but rather nearer to the S.; and declined ſomewhat to the S. of S. W. by S.; the upper part of its globe appearing from the ſpot where its height was taken, about as high as the tops of the veſſel, which laid in that direction. On the fourth, it was ſeen no more, the weather yet remaining very fine."

"When

In winter they frequently were ſpectators of that phœnomenon called by naturaliſts the northern lights. This contributed greatly for a time to diminiſh the diſmay, which the thick darkneſs in which the hemiſphere is enveloped in this climate during ſo long a night, is calculated to impreſs on the mind of man.

One would imagine a country ſo near the pole, and in which the heat of ſummer is very tolerable, notwithſtanding the continual ſhining of the ſun for ſome months together, would be ſubject to exceſſive and inſupportable cold, as long as winter laſted: nevertheleſs it has a different peculiarity. For about ſeven weeks, namely from the middle of November, until the beginning of January, reckoned by theſe good men according to holidays, viz.: from the beginning from that of St. Philip, which falls on the fifteenth of November, until the day of conſecrating the water, called the Holy Three Kings, and which is on the ſixth of January; for theſe ſeven weeks it rained for the moſt part abundantly, and without ceaſing on this iſland, the weather being pretty mild, and the cold very ſupportable: however after this period, that is to ſay, when the land winds blew, and more particularly the South, the cold became inſufferable.

This may indeed occaſion ſome ſurprize, ſince the ſouth wind is generally warm in all countries, and the north commonly cold: but we muſt take into conſideration, that the ſouth wind in reſpect to our iſlanders blew over all Europe, in winter covered with ſnow; and particularly over the northern part where the cold is extreme: but the north wind ſweeping an open ſea, inſtead of cold brought exhalations, yet ſomewhat freſh in themſelves, as they always bore along ſome ſnow with them: moſt men will have noticed when in harbour, that the land breeze is at all times colder than that from ſea. What confirms this account is, that all thoſe who have been upon the Riphæan mountains or chain, called the Poias Semnoy, and which ſeparates Ruſſia in Europe from Siberia, give a ſimilar deſcription with our mariners, of the quality of the north and ſouth winds.

As for ſnow, ſuch an aſtoniſhing quantity fell on this iſland, that their hut in winter was commonly entirely encloſed by it, ſo that they were left without any other means of getting out, than by an opening which they contrived in the roof of their entry room.

In reply to my enquiries reſpecting tempeſts, theſe ſailors informed me, that they did not once hear it thunder during their reſidence on the iſland.

If we except white bears, rein-deer and foxes, which, as I have before noticed, were found in great plenty on the iſland, it is deſtitute of all four footed animals, as well as of men. It is true ſome wild fowl were ſeen in ſummer: but they were only geeſe, ducks, and other water fowl.

The ſea likewiſe round about the iſland is deſtitute of every kind of fiſh. Our ſailors in other reſpects very ſtrict in their religion, contrary to the cuſtom of this deſcription of people, could not therefore obſerve either the great or the ſingle faſts. Nay had there been a ſuperabundance of fiſh upon the coaſt, theſe unfortunate men could have derived no benefit from the circumſtance; ſince as they had neither tackle nor nets, they could not have caught them: the choice of meat might in ſuch a caſe however have ſuggeſted to them, to employ their ingenuity in conſtructing tackle; this they probably would have effected in the end, yet at any rate not without great difficulty.

Few whales were perceived nigh the ſhore, but ſea dogs and ſea calves in very conſiderable numbers. It muſt not therefore be wondered at that the Ruſſians ſhould have

" When the ſun left riſing, the moon aſſumed its place, and ſhone day and night without ſetting; as it was then in its higheſt quarter." See Recueil des Voyages qui ont ſervi a l'etabliſſement et aux progrès de la Compagnie des Indes Orientales formée dans les Pays Bas.

ſometimes wintered here; with the ſkins, the teeth, and the oil, of theſe animals, and particularly of the laſt mentioned, they carry on a conſiderable trade: what rather ſhould excite aſtoniſhment, is the circumſtance, of no ſhip's arriving at the iſland during the whole time of our ſailors' reſiding there. Hence I ſuſpect that the advantage derivable from the fiſhery in this quarter, is not equal to that upon the weſtern coaſt of Spitzbergen, to which ſhips commonly ſail.

They told me it frequently happened that they met with teeth of ſea calves upon the ſhore, and ſometimes jaws of thoſe animals, but never entire carcaſes. This can excite no wonder. It does not admit a doubt, that if they died on the ſhore, they would be devoured by the white bears, and probably by the foxes as well.

The great number of teeth and jaws with which the ſhores are beſtrewed, makes me ſuſpect with great probability, that theſe carnivorous beaſts frequently ſurprize the ſea calves when aſleep, and devour them. I am led to this ſuſpicion from a knowledge of its being common for the bears to feed on the dead whales, which are frequently ſeen floating on the ſea, or are caſt upon the ſhores of theſe iſlands contiguous to the pole. We have before obſerved, that the rein-deer are ſupported by the moſs, which grows plenteouſly in theſe uninhabited and deſart regions, but what feeds the foxes that are met with? It is well known that this animal is carnivorous, and lives on the continent upon fowl, and hares, which it ſurprizes: it is alſo probable that in this country, its food is thoſe animals which the bear has killed, and which not having power itſelf to attack, have yet fallen an eaſy prey to that ſtronger beaſt.

Before I proceed to mention the lucky, and unhoped-for deliverance of our ſailors from their loneſome ſituation, a ſituation in which they expected to paſs their days, I muſt now relate an incident which I had omitted before, and which is well worthy of remark: As long as they remained upon this iſland, they had been free both from lice and fleas; and it was not till their return to their native country, that theſe vermin made their appearance again upon them.

Moſt writers of voyages have remarked that upon croſſing the equinoctial line, ſailors who are much ſubject to be louſy, and the cloaths which they wear, that is to ſay, their checked ſhirts, become immediately clear of them: as ſoon however as they recroſs the line, they are peſtered with theſe vermin again, as much as before. Theſe two ſimilar incidents occaſion me a reflection reaſonable enough in itſelf; it is that ſince the paſſing of the line, and the paſſing of the polar circle produces a ſimilar effect, there muſt needs be between the one, and the other, a connection, into which it would be well that naturaliſts ſhould examine.

Our unfortunates had now been nearly ſix years in this diſmal ſituation, when Feodor Werigin died, reduced to a ſkeleton; ſo much had he ſuffered from his dreadful illneſs. Releaſed it is true from the cares of attending and feeding him, and from the grief of ſeeing him ſuffer, without the power of affording him relief, they did not yet ſee his death without emotion; they ſaw their number now diminiſhed, and there were but three remaining. As his deceaſe took place in the winter, they made a hole in the ſnow as deep as poſſible, and laid his corpſe in it, covering it in the beſt manner they could, that the white bears might not get to and devour it.

To conclude, at a time when every one was reflecting upon this laſt duty paid to their companion, and under apprehenſion that it would be his lot to lay by his ſide, contrary to all expectation, a Ruſſian veſſel appeared in ſight, on the fifteenth of Auguſt 1749.

On board the ſhip was a merchant of a certain ſect, called by its profeſſors Stara vieva, or the ancient faith, a good and worthy character. The ſhip was originally in-

tended to winter in Nova Zemla, by its principal; however, fortunately for our ſailors, M. Vernizobre propoſed to this merchant, to change that deſtination for Spitzbergen; which propoſal, after many excuſes, and much demurring, was complied with.

The wind being contrary on the voyage, the ſhip was not able to reach the intended ſtation; they therefore directed her courſe towards Eaſt Spitzbergen, directly oppoſite to the ſpot inhabited by our adventurers. They perceived the veſſel, and made haſte to kindle different fires upon the hills in the neighbourhood of their dwelling; they hoiſted as well a flag ſtaff upon the ſhore; a rein-deer's ſkin, which they faſtened to it ſerving them for a ſignal in lieu of colours. Thoſe on board the ſhip obſerved theſe ſignals, and concluding that they were made by people who intreated their aſſiſtance, they came to anchor.

It would be uſeleſs for me to attempt to deſcribe the joy with which theſe unfortunate men were filled at ſeeing ſo nigh the inſtant of their unexpected deliverance. They treated with the commander of the veſſel, entered his ſervice, and agreed with him for the tranſport of themſelves, and all their effects to their native land, for which they were to pay him eighty rubles. They put on board the veſſel fifty pood, or two thouſand pounds of rein-deer's fat, and a number of hides of theſe animals, as well as blue and white fox ſkins, and thoſe of the ten bears which they had killed: they did not forget their bow, their arrows, their ſpears, or lances, their axe, almoſt worn to the handle, and nearly uſed up knife; their awl, their needle, which were incloſed in a bone box very ingeniouſly worked with their knife, the nerves or fibres of the white bears, and rein-deer, in ſhort whatever they poſſeſt.

Theſe different articles which I have deſcribed, were ſent by M. Vernizobre to Count Von Schuwaloff, and by him were confided to my care: I had full leiſure to examine them, and to lay them before the unſated curioſity of ſeveral perſons; among others different profeſſors of the Imperial Academy, Der Wiſſenſchaften, in whom they excited aſtoniſhment. In company of theſe latter gentlemen, I converſed with the pilot Alexis Himkoff, and his godſon the ſailor, Jwan Himkoff, and queſtioned them at different times on their adventures.

I muſt be allowed in proceeding to mention a trifling circumſtance, relative to the little box, which theſe men had made for holding their needle.

I ſhewed this box to certain virtuoſi and informed them that the ſailors had made it with a knife, and ſolemnly aſſured me of it; theſe gentlemen did not believe that they told the truth; they would have that it was turned; and that theſe men had deceived me, in giving out that it was their workmanſhip; whence they concluded, that, as they had told a falſity on this occaſion, there was left room for doubting of what they had related reſpecting the events on the iſland which they had inhabited.

By chance it happened that while we were in converſation on the ſubject, M. Homann, a very ingenious turner, came into my apartment. As ſoon as I ſaw him, I obſerved to the company, you ſee that man, he is certainly the fitteſt perſon that can be to decide this matter. I ſtept towards him, and gave the queſtion a different turn, in order that it might not be ſuſpected that M. Homann ſhould anſwer me with more courteſy than truth. You muſt decide, Sir, ſaid I, on the point I have to queſtion you between this gentleman and me: I maintain that this box is turned; this gentleman the contrary. After Homann had taken and examined it, he anſwered me, this gentleman is in the right: this never was made with a turning lathe: it is a bone which has been rounded by ſhaving it. This anſwer ſilenced the company. It was now my turn to ſpeak: I obſerved that ſince on this occaſion theſe ſailors had told truth, in what we had heard decided, there is no room left for doubting the remainder of what was related by them.

I come now to the return of our mariners: they arrived ſafe at Archangel the twenty-eighth of September 1749, after, as I have before noticed, having paſſed ſix years and three months in this dreadful ſeclusion.

The inſtant of meeting of the pilot and his wife was threatened with a melancholy cataſtrophe. She was ſtanding on the bridge as the veſſel arrived: ſhe recognized her huſband; ſhe loved him moſt ſincerely; ſhe had ſo long bewailed him as dead; but now, inconſiderate, without patience to wait till the ſhip came to the pier, ſhe threw herſelf forward to claſp him in her arms, ſhe fell into the water, and with difficulty was ſaved from periſhing.

I muſt now in concluſion remark, that theſe men who had lived ſo long without bread, ate it now with reluctance. They complain of its puffing them out. The ſame objection in ſhort they make to all ſorts of drink, and now make rain water alone their beverage.

APPENDIX.

THE learned man, which I mentioned in my narrative I had conſulted reſpecting the reckoning of our iſlanders, concerning the riſing and ſetting of the ſun, and whatever related to the courſe of that planet, was Profeſſor D. Krazzenſtein, member of the Imperial Academy of Wiſſenſchatten at Peterſburg. This is the tranſlation of the letter which he wrote to me on this ſubject.

"I have to apologize to you for having ſo long delayed to ſend my opinion on the queſtions reſpecting which you wrote to me: the time which the calculations required, and the long continuance of the rains, have prevented my doing ſo before.

"After conſidering the matter with great attention I find that the circumſtance which Profeſſor Griſchon adduces as a proof of the exactitude of the reckoning of our iſlanders, namely, the two days later reckoning than that of the mariners who brought them from the iſland; has a direct contrary tendency.

"Let any reckon the 29th of February in a leap-year, this day will be reckoned by thoſe who have no knowledge of the interpolation of a day, as the 1ſt of March; and after two ſuch years, what by one will be counted the 29th of February, will by the other be eſteemed the 2d of March; hence it follows, that if our iſlanders had neglected to attend to the biſſextiles, 1744 and 1748, they would conſequently have reckoned that the 17th of Auguſt, which their deliverers called the 15th. It is alſo evident, that, if they paid attention to the leap-years, they made a miſtake of two days, and if they did not allow for them, they erred in computation by four days: this can appear but trifling, if we conſider the dark and cloudy ſeaſon of winter, where they were without means of eſtimating the regular day. Furthermore, in that year when they noticed the entire diſappearance of the ſun on the 26th of October, they muſt have erred in their time, by being ten days in advance, or we muſt neceſſarily preſuppoſe, that they were in latitude 74° 41′, which can hardly be imagined. Bears' Iſland is in that latitude, where they muſt in ſuch caſe have been; which is not probable.

"If their place of reſidence was in latitude 77° and a half, as laid down upon the chart, the ſun would then ſhine for the firſt time the 4th of February: from the 11th of April to the 8th of Auguſt, it would be continually above the horizon, and finally, on the 16th of October it would wholly diſappear.

"Had they been on Bears' Iſland, they would have ſeen the ſun the firſt time on the 23th of January: the ſhining of the ſun above the horizon would have continued from the 20th of April until the 31ſt of July, and on the 23d of October it would have diſappeared entirely.

"From the remarks of our islanders, it would appear more likely that they were on the last mentioned island; but the duskiness of the atmosphere at the horizon, a circumstance attendant on northern climates, may be the cause of their having perceived the circulation and absence of the sun almost ten days later and ten days earlier than computation will shew.

"If the beginning of the revolution of the sun above the horizon be placed on the 2d of May, the end of this revolution above the horizon must happen on the 19th of July, and in this case they must have been in 71° and a half of latitude; which is not possible.

"I wish we had the relation in the possession of M. Von Klingstadt of Archangel, that we might add it to yours. Probably by this means, what is wanting might be supplied, particularly the exact time of these sailors arriving from the island. I have no doubt, were you to communicate the wish, that he would take a pleasure in gratifying you; he fills the station of Sub-auditor of the Admiralty, and dwells with M. Vernizobre. I am, Sir, &c."

At the close of this Narrative I must add two things: the result of the illustration of M. Von Klingstadt, and the reflexions with which Mr. Vernizobre terminates the first letter he wrote to me respecting these sailors, and the account of their adventures.

One of these men, says M. Von Klingstadt, is called Alexis Himkoff, and is fifty years of age; another is named Stephen Scharapoff, forty-two years old; the third, by name Iwan Himkoff, is in his thirty-sixth year. All these, on their arrival, were in sound and perfect health: I myself had occasion to remark it, upon questioning them on the particulars of such an extraordinary residence, attended by such a wonderful preservation.

These are the reflexions of M. Vernezobre. The English have a fabulous history of Robinson Crusoe; this history however is certainly true. The first is represented in a warm climate: but our sailors were in 77° and a half of latitude. The Englishman was enabled to make a kind of punch with the raisins which grew on the island; but our hardy and sturdy Russians were under necessity of contenting themselves with water. Robinson had lost almost all knowledge of Christianity; but our adventurers at all times, as I am assured, preserved their faith, and unceasingly placed their confidence in God.

ACCOUNT OF A VOYAGE TO SPITSBERGEN IN THE YEAR 1780. BY S. BACSTROM, M. D.

COMMUNICATED BY THE AUTHOR.

[PHIL. MAG. July 1799.]

SIR,

HAVING received much gratification from a perusal of your Magazine, I send you a few particulars respecting a voyage which I made to Spitsbergen in the year 1780, extracted from a journal I kept at the time; which you may lay before your readers, if you think they can contribute either to their information or amusement.

The Editor of the Philosophical Magazine. I am, &c.

S. BACSTROM.

A VOYAGE to Greenland, as it is called, though in fact to the island of Spitsbergen, for the purpose of killing the black whale fish, is one of the healthiest that can be undertaken, and furnishes so much curious matter for amusement to persons of an inquisitive turn of mind, that even a second will hardly satisfy such, if they have been fortunate enough to sail with a good commander, and in a vessel well appointed. In both these respects I was very fortunate, which is rather uncommon; the masters or commanders in the Greenland trade being generally men of little or no education, and consequently void of those liberal sentiments necessary to render the situation of those who accompany them comfortable. If a regularly educated surgeon, from a desire of visiting such northern regions, goes in a vessel under such a person as I have described, he is generally sickened the first voyage; a barber is perhaps his successor, and when any illness or accident happens on board, if the patient escapes with his life, he is often rendered a cripple. I have seen some instances of this kind.

The unsociable disposition of the master is not, however, the only circumstance that often deters from a second voyage. I have known vessels well stored by the owners with every necessary and useful article, and even a liberal supply of what some would call luxuries, and yet every comfort withheld from those on board: the master literally starving himself and officers, and not allowing a bit of fire in the cabin, in these cold latitudes, that he might save a few coals, some dozens of hams and tongues, a quantity of cheese, butter, flour, wine, porter, &c. *to send home to his own family* at the end of the voyage: a paltry theft, at the expence of the health and frost-bitten limbs of those on board.

When the reader is informed, that such has been my passion to visit foreign climes that I have been no less than fifteen voyages, one of them round the world, he will not be surprised that I should wish to gratify my curiosity by visiting the frozen regions, even though I knew something of the inconveniences before described, to which those who undertake the voyage are often exposed. My business was to guard against them as well as possible, by proper inquiries respecting the character and disposition of the master, and I succeeded to my wish in two voyages to these parts: the first was in the Sea Horse, in the year 1779, which yielded me much satisfaction; but I was more completely gratified by the second, which is the one I mean to describe.

I engaged myself as surgeon on board the Rising Sun. William Souter, master. A well appointed stout ship, of four hundred tons burthen, in the employ of Mr. William Ward. The vessel carried about ninety men, and had twenty nine-pounders mounted on the main deck, with nine whale-boats, some of them hung in the tackles over the sides, and others stowed and lashed on the deck.

We

We ſailed from London in the latter end of March 1780, and, as is uſual with Greenlandmen, called at the town of Larwick, the capital of the Shetland iſles, where we found a moſt hoſpitable reception. A Mr. Innes, the moſt opulent inhabitant of that country, kept an open table for every maſter of a veſſel and his ſurgeon; and no language can convey a proper idea of the kind and diſintereſted manner in which he received and entertained his gueſts. We lay there fourteen days wind bound. The country has a bleak barren appearance, the ſurface being generally rocky, or covered with turf, which is the fuel employed there; but the benevolence and hoſpitality of the more opulent, and the decency, ſobriety, and good conduct of all the inhabitants, even thoſe of the loweſt claſs, more than compenſate for the barrenneſs of the ſoil.

Proviſions of every kind, the finer vegetables and fruit excepted, are very abundant here, and extremely reaſonable. The price of a good fowl was three-pence, of a dozen of new-laid eggs one penny; and as much excellent fiſh, cod, haddock, halibut, mackerel, &c. could be bought for one ſhilling, as would coſt at leaſt ten pounds at Billingſgate, or as uſed to dine our whole ſhip's company and the cabin. Potatoes, turnips, &c. are not more common there than peaches and apricots in England. Wheat flour is alſo a rare article, but the inhabitants in general prefer bread made of oatmeal.

The town of Larwick conſiſts of about two hundred houſes, of one, or at moſt of two ſtories, which form a narrow crooked lane on the ſea-ſide, badly paved with flat ſtones. All the houſes are built of quarry ſtone: thoſe of the rich are roomy, ſtrong, convenient, and well furniſhed; thoſe of the poor are ſmall, and very ſmoky, for want of a proper arrangement of the chimnies.

Though the place lies in 60° north latitude, the winters are not ſevere; they are, however, wet and ſtormy. The harbour is very capacious and ſafe, and the anchoring ground good. About twenty or more Engliſh Greenlandmen were lying here at anchor, and ſeveral Dutch herring buſſes. Having filled our empty water-caſks, and laid in a ſtock of fowls, eggs, geneva, &c. we took leave of our kind friends on ſhore, and, the wind being ſoutherly, hove up our anchor, and ſet ſail for the ice.

As we advanced to the northward the night became ſhorter till we came near North Cape in lat. 71° 10′, when we had no night at all. We were overtaken in that latitude by a moſt tremendous gale of wind from the north-eaſt, which laſted three days and nights. Our ſhip lay more than once on her beam-ends, and every one on board thought ſhe could never right again; but providentially we weathered the gale. A ſtorm in thoſe high latitudes is ſo intenſely cold, when it blows from the north or north-eaſt, that it is impoſſible to look in the wind's eye, as the cold is ſuch as literally to tear the ſkin off the face.

In about 76° northern latitude we meet with ice floating in ſmall round cakes, by the ſailors called pancakes: you ſail through this ice in perfectly ſmooth water; which, from being of a green colour in the North Sea, blue to the northward of Shetland and Ferro, grows gradually of a darker colour, and looks now of a deep black dye. We ſailed ſeveral days through theſe floating ice-cakes. When in a ſtill higher latitude, an open black-looking water re-appears; and when you reach about 77° or 78° you paſs through large maſſes of floating ice twenty or thirty fathom thick, and ſome of them five or ſix times bigger than your own veſſel. Great care is taken to avoid ſtriking againſt thoſe maſſes, which ſometimes are ſo cloſe that there remains only a narrow channel for the ſhip to ſail through. I have ſeen this continue for twenty-four hours or longer. When this is the caſe, the commander ſtands in the main or fore-top, and ſometimes higher, and calls down to the men at the wheel how to ſteer. This navigation is attended with great danger, as the ice projects under water ſometimes two or three fathoms.

After

After navigating through thoſe floating maſſes, we ſaw the land of Spitſbergen eaſt from us. It is ſeen at an almoſt incredible diſtance, ſometimes at thirty leagues; a proof of its immenſe height. It generally appears amazingly bright, of the colour of the full moon, while the ſky above it looks white and cold.

In 79° and 80° you are prevented from going further to the northward by a ſolid continent of ice, or a collection of ice-fields, as they are called; ſome of which are many miles in extent. You make the ſhip faſt there with an ice-anchor, and look out for whales, having two or three boats on the watch conſtantly.

No ſhip could ever poſſibly navigate through the huge maſſes of ice, which muſt neceſſarily be paſſed before it can reach this high latitude, but for a circumſtance which would on firſt view be little expected—the ſea there is always as perfectly ſmooth as the river Thames: the irregularly diſpoſed maſſes of ice prevent the water from ever acquiring, by the impulſe of the wind, thoſe regular undulations, if I may uſe the term, which, by long continuance of the ſame impulſe, would otherwiſe at laſt raiſe it in billows.

As ſoon as we got into ſmooth water, perhaps forty or fifty leagues from the land, the ſevere climate and intenſe cold we had experienced on the paſſage in a more ſouthern latitude before we made the ice, changed into a much milder one; and when it was fine weather it was quite warm, ſo that the icicles that hung from the large maſſes of ice diſſolved and kept dropping till a return of colder weather. Among the fields of ice, but more ſo in the harbours, it is conſiderably warmer than on the paſſage near North Cape.

In the month of June we killed ſeven large whale fiſh, and went with them into Magdalena bay, to cut the blubber up into ſmall bits to fill the blubber-butts; which buſineſs is called *making off*. As the killing of the whales has been very well deſcribed by Zorgdrager and others, I need not deſcribe it.

When you approach a harbour on the coaſt of Spitſbergen, and, judging by the eye, expect to get in and come to anchor in three or four hours time, you are perhaps not leſs than ten or twelve leagues from it. This deception is owing to the immenſe heights of the rocky mountains, covered with ſnow, and bordered with ice towards the ſea-ſide, which make very large harbours appear like ſmall baſons, and the largeſt ſhips, when cloſe under them, like a boat on the Thames. Magdalena Bay, in 79° north, is capacious enough to hold the whole Britiſh navy; but, on account of the immenſe mountains which ſurround it, appears like a very ſmall inlet. We came to anchor in this bay, where we lay three weeks. While the people were making off, the maſters, ſurgeons, &c. of the different veſſels then there viſited each other, and diverted themſelves in the beſt way they were able. Such viſits laſt ſometimes twenty-four hours, for there is no night to interrupt the entertainment.

The firſt thing that ſtrikes a curious mind here is that ſolemn ſilence which reigns around; ſometimes interrupted with a noiſe, like thunder heard at a diſtance, occaſioned by huge fragments of ice and rocks rolling down from the immenſe ſteeps into the ſea.

I attempted to aſcend one of theſe mountains called Roche Hill. I got up about half way, which took ſeveral hours hard labour. At that height I found the rocks covered with birds' eggs of different ſizes.

There are ſeveral rivulets and waterfalls of excellent water ſupplied by the melting of the ſnow. I met frequently with ſcurvy-graſs, wild celery, endive, water-creſſes, and a few other plants and flowers; though the general vegetation which covers the rocks conſiſts in various kinds of moſſes and ferns. There are white bears of an enormous

ſize,

ſize, white foxes, deer, and elks, and above twenty different ſorts of water and land birds; ſuch as wild geeſe, wild ducks, ſea-parrots, roches, ſea-gulls, mallemooks, as the ſailors call them, whoſe quills make the beſt drawing-pens I ever met with, wild pigeons, the white duck with a beautiful ſcarlet head and yellow legs, and the ſnow-bird, whoſe note is as pleaſing as that of the bullfinch or nightingale.

This ſeaſon was the fineſt ever remembered in thoſe high latitudes, and we had almoſt conſtant fine weather. As we had room yet on board, and the ſeaſon was not too far advanced, in hopes of killing a fiſh or two more, we left Magdalena Bay and ſteered north. When we arrived in 80° we found a perfectly clear ocean free from ice, but ſaw no whales.

We continued puſhing to the northward with fine ſoutherly breezes and moſt beautiful weather, and could, with a good teleſcope, diſcover no ice to the northward, from the main-top-maſt head, but a ſolid continent of ice eaſt and weſt; ſo that we were in a kind of channel of perhaps three or four leagues wide. We kept puſhing on, the captain and I joking together about paſſing through the pole.

Both Captain Souter and myſelf found ourſelves at length ſome minutes north of 82°, where perhaps no man before us had ever been, nor ſince. The high ſnowy mountains of North Bank, or North Foreland, appeared very luminous, and bore ſouth on the compaſs.

We had a ſtrong inclination to puſh ſtill further north; but the danger of the eaſt and weſt ice, now to the ſouthward of us as well as to the northward, moving and locking us in, in which caſe we muſt have been beſet and inevitably loſt, created a prudent fear, and induced the maſter to put about ſhip for North Foreland. The wind ſhifted at the ſame time to the northward, and in a couple of days we came to anchor on North Bank, called Smeerenburg's Harbour. We ſaw now plenty of fin-fiſh or finners, white whales, and unicorns; which is a ſign that the ſeaſon is over for killing the black whale, which then retires to the northward. As all theſe animals are well known and deſcribed, I forbear ſaying any thing reſpecting them.

One of our men having been at the habitation of the Ruſſians in North Bank the year before, and aſſuring us that he could find the way to their hut, Captain Souter, a man of an inquiſitive mind, propoſed to me to pay them a viſit. We took ten or twelve men with us, a compaſs, a few bottles of wine, bread, cheeſe, &c. and ſome good trade-knives, with a ſmall keg of gunpowder, to make a preſent of to the Ruſſians.

We landed at the bottom of the harbour to the eaſtward, where we found a large valley, ſeveral miles in breadth, ſurrounded with immenſe high mountains, moſtly covered with ſnow; but as the ſun had melted a part, the brown and black rock appeared, and rivulets of clear water ran down, forming little waterfalls.

The ground was turf and clay, and not bad to walk on: we had ſeveral ſmall rivulets to croſs, of two or three feet wide, but very ſhallow; near them we found ſcurvy-graſs, water-creſſes, endive, wild celery, and a few ſmall flowers, and ſaw a number of land birds flying up at our approach. We croſſed a piece of ground where the Dutch had formerly buried their dead: three or four of the coffins were open, with human ſkeletons lying in them. Some inſcriptions on boards, of which above twenty were erected over the graves, had the years 1630, 1640, &c. affixed to them. We alſo ſaw the ruins of ſome brickwork, which had been a furnace, as the Dutch uſed to boil their oil here in the laſt century, and for that reaſon called it Smeerenburg's Haven, or the Harbour of the Fat Borough. We had above ſix miles to walk to the northward, and were very much fatigued on account of the unevenneſs of the ground and the heat, when we diſcovered

the hut of the Ruſſians at a diſtance. They perceived our approach, and ſent two or three people to meet and welcome us.

The common men made a ſtrange appearance; they looked very much like ſome Jews in Rag-fair or Roſemary-lane: they wore long beards, fur caps on their heads, brown ſheep-ſkin jackets with the wool outſide, boots, and long knives at their ſides by way of hangers. When we arrived at the hut, we were preſented to the caravelſk or commander, and to the ſurgeon, who both received us very politely, and invited us into the houſe, where we ſat down to reſt and refreſh ourſelves. Our people were introduced to their people in an outer room, and were entertained with meat and brandy. It happened fortunately that the ſurgeon was a German, a native of Berlin, of the name of Iderich Pochenthal, conſequently I could converſe with him; and we both acted as interpreters between his and our commander.

Captain Souter began with offering to the Ruſſian commander, (who was alſo dreſſed in furs, only of a finer ſort, and wore his beard and whiſkers like the common men,) the keg of gunpowder, and half a dozen of good table knives and forks: the Ruſſian captain accepted them with a great deal of joy, and made us a preſent in return, conſiſting of half a dozen of white fox ſkins, two brown loaves of rye-bread, ſix ſmoked rein-deer tongues, and two rib-pieces of ſmoked deer, for which we kindly thanked him. They turned out to be moſt excellent eating, and of a finer flavour than any Engliſh ſmoked tongues, or hung beef.

We placed our wine on the table, our bread and cheeſe, and the Ruſſian captain ordered boiled ſmoked rein-deer tongues, new rye-bread, and good brandy and water to be brought in. We all made a hearty, ſociable meal; the tongues, and the rye-bread, which was new and ſavoury, were a rarity to us: the Ruſſian officers reliſhed our Cheſhire cheeſe and ſhip's biſcuit as a very high treat. We drank the Empreſs of Ruſſia's and King George's health. The Ruſſian commander was an elderly man, of very agreeable manners; the ſurgeon extremely ſo, and very intelligent.

The hut conſiſted of two large rooms, each about thirty feet ſquare, but ſo low that I touched the ceiling with my fur cap. In the middle of the front room was a circular erection of brick-work, which ſerved as an oven to bake their bread, and bake or boil their meat, and at the ſame time performed the office of a ſtove to warm the room. The fuel employed was wood, which drives on ſhore plentifully in whole trees ſtripped of their branches. A chimney carried the ſmoke out of the roof of the hut; but when they wiſhed it, they could, by means of a flue, convey the ſmoke into the back room, for the purpoſe of ſmoking and curing their rein-deer fleſh and tongues, bears hams, &c. Round three ſides of the front room was raiſed an elevated place of about three feet wide, covered with white bear ſkins, which ſerved for bedſteads. The captain's bed-clothes were made of white fox ſkins ſewed together; the ſurgeon's was the ſame; the boatſwain, cook, carpenter, and the men, had ſheep ſkins. The walls inſide the room were very ſmooth and white-waſhed; and the ceiling was made of ſtout deal-boards, plained ſmooth, and white-waſhed.

The rooms had a ſufficient number of ſmall glaſs windows, of about two feet ſquare, to afford light: the floor was hard clay, perfectly ſmooth: the whole hut was nearly ſixty feet in length, and thirty-four wide outſide; and was conſtructed of heavy beams cut ſquare, of about twelve inches thick, laid horizontally one upon the other, joined at the four corners by a kind of dove-tailing, caulked with dry moſs, and payed over with tar and pitch, ſo that not a breath of air can penetrate: the roof conſiſted of thin ribs laid acroſs the beam-walls, and three-inch deal nailed over them, ſo that you could walk

walk on the top of the houſe: the roof was caulked and tarred, and perfectly tight. This is the manner of building houſes in the country in Ruſſia, particularly about Archangel.

The ſurgeon gave me the following account of this Ruſſian colony in Smeerenburg's Harbour:

Some aſſociated merchants at Archangel fit out a crabbla, or veſſel, every year, of about one hundred tons, with a commander, mate, ſurgeon, boatſwain, carpenter, cook, and about fifteen hands, well provided with muſkets, powder and ſhot, good large knives, and all kinds of utenſils for killing whales, unicorns, rein-deer, bears, and foxes.

With a ſufficient ſtock of rye-flour, brandy, cloathing, ſnow-ſhoes, deal-boards, carpenters' tools, &c. this veſſel ſails every year in the month of May from Archangel, goes round the North Cape of Norway, and arrives in June or July at Smeerenburg's Harbour, where the new colony is left on ſhore. The veſſel ſtays two or three weeks in the harbour to refit, and carries the old colony with their cargo (conſiſting of whales' blubber, blades or ſo called whalebone, white bear ſkins, white fox ſkins, eiderdown and feathers, unicorns' trunks, which is an ivory that never turns yellow, and ſmoked rein-deers' tongues,) home to Archangel. The coloniſts have no wages, but receive thouſandth ſhares for what they bring home: the captain has fifty ſhares, the mate and ſurgeon thirty each; the carpenter, boatſwain, and cook, ten each; and each common man or boy has one ſhare. The ſurgeon told me that the captain had above one thouſand rubles due to him, and he himſelf about ſix hundred, and each common man perhaps fifty or ſixty: that when they returned ſafe home, the common men would be able to live a whole year upon their money, and the officers much longer, as the neceſſaries of life were very cheap at Archangel; and for the company it had hitherto anſwered extremely well.

He told me this was his ſecond trip, ſo well had it anſwered his expectations. "During the ſo called long nights," ſaid he, "it ſeldom or never is ſo dark that you cannot ſee before you, nor is it ſo dreadfully cold as it is at Peterſburg every winter. When a ſnow ſtorm happens, we cannot go out of the houſe; but when it is ſerene, and no wind, it is not too cold to go out and walk many miles. With the moonlight, the uncommon brilliancy of the ſtars in theſe high latitudes, and the reflection of the northern lights, or aurora borealis, we have ſo much light that we can ſee to read a book or to write.

"In winter-time the black whales come into the harbour and play cloſe within ſhore, where we kill now and then one with harpoons fired out of a ſwivel. We kill white bears, foxes, rein-deer, and birds, as many as we can before the night-ſeaſon, which commences in September, when all the land animals leave us and walk over the ice into Nova Zembla and Siberia: the land birds leave us in the ſame manner. Unicorns we alſo kill in the harbour, for the ſake of their ivory trunks, which are afterwards ſent to Germany and France."

The ſurgeon and I had a race on ſnow ſhoes, which are a kind of ſkates, of about two feet in length, for ſkating over the ſnow and ice. As I was in former years a good ſkater, I could uſe them as well as he did. We ran ſix or ſeven miles with them in an hour without fatiguing ourſelves: they have no irons.

Before we left our Ruſſian hoſt, he informed us that a few weeks before they had, coming home from a ſhooting party, found an Engliſh captain and nine or ten men overhauling their property in the hut. The captain, finding that his cheſt had been broke open, and that his rubles were diminiſhed conſiderably, reproached the Engliſh commander with the robbery, and a battle enſued. "The Engliſh fired upon us," ſaid the ſur-

geon, who acted all along as interpreter, "and killed one of our men on the ſpot. We returned the fire and wounded ſome of his men, and cauſed them to retreat precipitately. When the Engliſh were gone, our captain counted his rubles, and found that there were ſix hundred miſſing.". He intended to ſend a ſtatement of the affair to the Ruſſian government.

After having ſtaid above twelve hours with the Ruſſians, highly entertained, we invited them to come to ſee us on board, and took our leave, returning the ſame way by the compaſs, and arrived ſafe on board, after having been abſent almoſt eighteen hours.

We now prepared for the voyage home; and after having filled our empty caſks with good water from the ſhore, and made a clear ſhip, we ſet ſail with a fine north-eaſterly breeze in the middle of July 1780. We ſailed again through a great quantity of floating ice, and, our ſhip being a good ſailer, paſſed ſeveral full ſhips bound homewards.

The firſt pleaſing change we experienced was to have ſome night, and to be obliged to light a candle in the cabin. O what a luxury!—When you have no darkneſs for a conſiderable time (during May, June, and July), light becomes tedious at laſt; and the firſt time you ſee a candle burning in the cabin, and a dark night, the pleaſure is indeſcribable. Before we came into this more ſouthern latitude, I uſed to obſerve the ſetting of the ſun, reſting, as it were, on the horizon, appearing of a very large ſize, ſurrounded with moſt beautiful and glorious colours of various tints, and then the riſing of it ſhortly after in full majeſty. Language cannot convey an idea of the ſcene.

We came to anchor at Larwick towards the end of July, and were received in the kindeſt manner by Mr. Innes and all our friends in the place.

After three weeks ſtay we took leave of our Shetland friends, and ſailed in company with a number of full ſhips for England. When we came on the coaſt of Northumberland and Yorkſhire, the breeze and weather being favourable, we were delighted with the ſmell of the hay from the ſhore, and the ſight of the pretty little towns and villages built on the ſea-ſide, and refreſhed with excellent freſh cod and haddock, which the Yorkſhire cobles (a kind of fiſhing-boats) bring on board; in return for which they prefer taking a piece of beef or pork to money: they bring ſometimes eggs, potatoes, &c. We had an uncommonly pleaſant voyage home, and conſtant fine weather, accompanied with northerly breezes.

We arrived about the latter end of Auguſt ſafe in Greenland-dock, after having been out five months.

Captain Souter kept an excellent table in the cabin, and a conſtant fire in the ſtove: his ſtudy was to make every perſon on board comfortable. In the fifteen voyages I have been to ſea, I have only twice had the good fortune to ſail with men of equal worth; Mr. Charles Paterſon, of the Sea-horſe, and Mr. William Alder, now a lieutenant in the Britiſh navy.

LETTERS ON ICELAND:

CONTAINING

OBSERVATIONS ON THE CIVIL, LITERARY, ECCLESIASTICAL, AND NATURAL HISTORY; ANTIQUITIES, VOLCANOS, BASALTES, HOT SPRINGS; CUSTOMS, DRESS, MANNERS OF THE INHABITANTS, &c. &c. MADE, DURING A VOYAGE UNDERTAKEN IN THE YEAR 1772, BY JOSEPH BANKS, ESQ. F. R. S. ASSISTED BY DR. SOLANDER, F. R. S., DR. J. LIND, F. R. S., DR. UNO VON TROIL, AND SEVERAL OTHER LITERARY AND INGENIOUS GENTLEMEN.

Written by UNO VON TROIL, D. D.
First Chaplain to his Swediſh Majeſty, Almoner of the Swediſh Orders of Knighthood, and Member of the Academy of Sciences at Stockholm.

TO WHICH ARE ADDED,

The Letters of Dr. IHRE and Dr. BACH to the AUTHOR, concerning the Edda and the Elephantiaſis of ICELAND: alſo, Profeſſor BERGMAN'S curious Obſervations and Chemical Examination of the Lava and other Subſtances produced on the Iſland.

INTRODUCTION.

THE accounts of Iceland, which have hitherto made their appearance in the Engliſh language, are of ſuch a nature, that it would betray ignorance or partiality to recommend them to the public as ſatisfactory and faithful.

The firſt writer of any known hiſtory of Iceland in the preſent century, was John Anderſſon, afterwards burgomaſter of Hamburgh, who undertook a voyage to this not much-frequented iſland in a Greenland ſhip; but the authenticity of his performance is far from being ſuch as may be relied on with confidence.

Niels Horrebow, a Daniſh aſtronomer, was ſent to Iceland by the court of Denmark, on purpoſe to contradict Anderſſon's account: he publiſhed ſome obſervations on Iceland, but from a too great a deſire to pleaſe his employers, he fell into the oppoſite error, and paints all his objects with a glow of colouring, that does not exactly correſpond with the truth.

In Richer's Continuation of Rollin's Hiſtory is a hiſtory of Iceland, a moſt pitiful compilation, and full of the groſſeſt errors that ever diſgraced the hiſtorical page.

Under the authority of the Royal Society of Sciences at Copenhagen, Eggert Olafſen and Biarne Povelſen, two men of learning, natives of Iceland, and reſiding in the country, travelled all over that iſland, and gave, in two volumes in quarto, a faithful and ample account of all that deſerves the attention of the learned and curious, illuſtrated by numerous engravings; but though the performance is accurate and circumſtantial, yet it is unfortunately clogged with repetitions, and the facts are recounted in ſo tedious and unintereſting a manner, that it requires a moſt phlegmatic temper, and a large fund of patience, to go through the whole of this work, for it is filled with a long and dull recital of events, methodized in the moſt formal manner poſſible. It can therefore by no means be thought ſuperfluous, that Dr. Von Troil has favoured the literary world with his intereſting Letters on Iceland; a work which, on account of its varied matter, and the great learning diſplayed every where for the inſtruction of the curious reader, deſerves the warmeſt approbation of the public.

Men of talents and learning will, we flatter ourſelves, think highly of this preſent performance by Dr. Von Troil, though perhaps it may be ſometimes a little deficient in point of language.

The

The preſent tranſlation has been made from the laſt German edition, publiſhed by Meſſrs. Troil and Bergman, with numerous additions and corrections; and though it is not oſtentatiouſly recommended to the public for any elegance or accuracy of ſtyle, it may however be ſafely ſtated as a faithful tranſlation from the original, and a work of real merit and utility.

We leave it to the unprejudiced reader to form a judgment of this performance which is replete with variety of matter, treated on in an inſtructive and ſatisfactory manner; and likewiſe on the great learning relative to natural hiſtory, hiſtorical, antiquarian, and philological ſubjects, which are every where blended in the context of the following letters; and we are of opinion, that in reſpect to theſe points, this work requires no apology for offering it to the impartial public.

As to its utility, it will not be unneceſſary to prefix a few obſervations on the importance of Icelandic literature.

The Engliſh language was originally ſo nearly related to that of Iceland, that we need only caſt our eyes on a gloſſary, to ſee the affinity of both languages, and the great light the one receives from the other.

The Normans and Danes, who were during a conſiderable time maſters of England, introduced into it many cuſtoms, laws, and manners, which would remain inexplicable; but the Icelanders being originally deſcended from the ſame Normans, and living on an iſland which has very little intercourſe with the reſt of the world, have preſerved their language, manners, and laws in their primitive ſimplicity; nay, all the hiſtorical accounts of the North are contained in the hiſtorical ſayings (*ſagas*) of the Icelanders, which are very numerous, and would be of very important ſervice in the inveſtigation of the origin of the language, manners, and laws of England. Nor can it be advanced that this kind of ſtudy could not be purſued amongſt us for want of theſe hiſtorical monuments of the Icelanders; ſince by the known indefatigable zeal for the promotion of all branches of literature, and the moſt diſintereſted generoſity of Joſeph Banks, Eſq. P. R. S. one hundred and ſixty-two Icelandic manuſcripts have been preſented to and are depoſited in the Britiſh Muſeum.

The hiſtory of the northern nations, their divinities, religion, principles, and tenets, together with their poetry, preſent the philoſophic reader with ſubjects worthy of his ſpeculation; they at the ſame time account for many hiſtorical events, and for many a curious cuſtom preſerved by ſome one or other of the nations deſcended from the ſame root with theſe inhabitants of the north.

The ſubject of volcanos, and of the origin of certain kinds of ſtones and foſſils, have of late attracted the attention of philoſophers; but in my opinion, they are no where treated with ſo much candour, truth, and philoſophical preciſion as in thoſe remarks which the Chevalier Torbern Bergman ſent to our author in form of a letter, and which he has here communicated to the public.

The whole iſland of Iceland is a chain of volcanos, the ſoil almoſt every where formed of decayed cinders, lava, and ſlags; and the numerous hot ſprings, eſpecially that called *Geyſer*, give full ſcope to the moſt curious remarks on theſe ſubjects, ſince they are here obvious in ſo many varied ſhapes, and for that reaſon become inſtructive. Lava and ſome other productions of nature have not been hitherto ſubjected to chemical proceſſes: profeſſor Bergman therefore deſerves the thanks of the public for his excellent letter, giving a very intereſting account of his experiments on all the various foſſils and natural productions of Iceland. The origin of baſaltic pillars, ſuch as form the Giant's Cauſeway in Ireland, the whole iſland of Staffa, and more eſpecially Fingal's Cave, has of late been much ſpoken of by travellers and learned mineralogiſts. Some

aſcribe their regular configuration to cryſtallization: others pretend the ſubterraneous fire to be the cauſe of their regular columnar ſhape; but the ingenious Chevalier Torbern Bergman proves, by the moſt ſolid arguments, that the baſalt pillars are no lava, or any ways related to volcanic ſubſtances, and that their regular columnar ſhape, he ſuggeſts, is owing to another cauſe, and by his reaſoning renders it highly probable.

We are at the ſame time preſented with a view of the primitive earths, that originally compound all earthy and ſtony bodies hitherto diſcovered on the ſurface of our globe; and their characters are here alſo ſet forth in the moſt eaſy and obvious manner by experiments.

This great and intereſting circumſtance alone would be ſufficient to recommend the preſent performance to the peruſal of chemiſts, mineralogiſts, and philoſophers.

The letter of the Archiater Bach to Dr. Troil on the diſeaſes of Iceland, contains the moſt curious and intereſting obſervations for the uſe of medical gentlemen. In ſhort, there is ſcarcely a claſs of reader who will not find inſtruction and entertainment in the ingenious performance of Dr. Uno Von Troil, the author of this book.

He is a Swede by birth, and deſcended of a noble family: his father Samuel Von Troil, was archiſhop of Upſal.

After having ſtudied divinity, the oriental and northern languages and antiquities, together with the various branches of natural philoſophy, he travelled, and viſited Germany, France, England, and Holland.

During his ſtay in England he was introduced to Mr. Banks, who was then returned from his voyage round the world, and preparing to go on a ſecond; but that not taking place, he was prompted to make a ſhort excurſion towards the Weſtern Iſlands and Iceland; and eaſily prevailed upon Dr. Von Troil to accompany him on this literary voyage.

After the return of Dr. Von Troil, he wrote letters to ſeveral learned men in his own country, eminent in the various profeſſions and branches of literature and ſcience, on the different matters he had obſerved in Iceland during his voyage; they were at firſt only intended to ſatisfy the ſolicitations and curioſity of his friends, who wiſhed to be made acquainted with whatever he had diſcovered worthy the notice of a literary man, and that might likewiſe bid fair to afford amuſement.

The ſenator Charles Count Schetfer, a man of a benevolent character, and who patronizes learning in all its branches, together with its profeſſors, ſolicited our author to communicate them to the public: in compliance with which, they were publiſhed at Upſal in 1777 in octavo; and the next year after they appeared at the ſame place tranſlated into German, very much enlarged with additions of the author and alſo of Chevalier Bergman.

Dr. Von Troil has for his talents, learning, and character been promoted in his native country to ſeveral places of honour and emolument, ſo that he may now be conſidered as the firſt man in Sweden in point of eminence in the eccleſiaſtical line, and in point of learning inferior to none: he has taken his degree of doctor of divinity, is principal chaplain to the king, preſident of the conſiſtory, rector of the great church of Stockholm, and prelate of all the Swediſh orders of knighthood.

Theſe curſory hints were thought neceſſary for uſhering his letters on Iceland into the literary world; the public will, no doubt, be curious to know the particular obſervations made by a learned man on an iſland that Mr. Banks, one of the firſt characters of this country, thought deſerving a nearer inſpection by a voyage he undertook at a great expence, accompanied by ſeveral learned and ingenious men.

For

For the information of thoſe who wiſh to be acquainted with all the publications that have appeared, to treat either at large of Iceland, or examine ſome of its particular objects, we have here ſubjoined a very curious and complete catalogue of them.

Catalogue of Writers on Iceland.

1 JOACHIM LEO wrote ſome verſes on Iceland in the German language, full of errors. There are four editions of them. Arngrim Jonæ, in his Commentario de Iſlandia, quotes the edition of 1561.

2 Jacobi Ziegleri Scondia ſeu Deſcriptio Groenlandiæ, Iſlandiæ, Norvegiæ, Sueciæ. Francofurti, 1575.

3 Jonſbogen (i. e. Jonſbook, an old book of laws) Hoolum (in Iceland) 1578. 8vo. and ſeveral editions ſubſequent to it.

4 Arngrim Jonæ brevis commentarius de Iſlandia. Hoolum, 1592. 8vo. and Hafn 1593. 8vo.

5 Ejuſd. Crymogæa ſeu rerum Iſlandicarum libri tres. Hamburg 1609, 1610. 1614. 1618. 1620. and 1630.

6 Blefhenii Iſlandia ſ. populorum et mirabilium, quæ in ea inſula reperiuntur, accurata deſcriptio. Ludg. Batav. 1607. 8vo.

7 Angrim Jonæ Anatome Blefkeniana. Hoolum, 1612. 8vo. and Hamburg, 1613. 4to.

8 Dan Fabritius de Iſlandia et Groenlandia. Roſtock, 1616. 8vo.

9 Arngrim Jonæ epiſtola pro patria defenſoria. Hamburg, 1618. 4to. written in oppoſition to the preceding book.

10 Arngrim Jonæ Apotribe caulmniæ. Hamburg, 1622.

11 De regno Daniæ et Norvegiæ inſuliſque adjacentibus, tractatus varii collecti a Stephano Stephanio. Ludg. Batav. 1629. 12mo. from whence the part concerning Iceland is taken out, and printed ſeparately with the title.

12 Iſlandicæ Gentis primordia et vetus republica. Ludg. Bat. 1629, 12mo.

13 Arngrim Jonæ Athanaſia Gudbrandiana. Hamburg, 1630.

14 Peder Clauſſon's Norriges og omliggende öars Beſkrifvelſe. Kiöb. 1632. 4to. and Kiöb. 1637. 8vo.

15 Arngrim Jonæ ſpecimen Iſlandiæ hiſt. et magna ex parte chorographicum. Amſt. 1643.

16 La Peyrere Relation de l'Iſlande, in a letter to Mr. de la Motte Vayer, dated 18 Dec. 1644. Is inſerted in the Receuil des Vogages au Nord, tom. I. Amſt. 1715. 8vo.

17 Wolfii Norrigia illuſtrata. Hafn. 1651. 8vo. and 4to.

18 Wolffii Norriges, Iſlands og Grönlands Beſkrifvelſe. Kiöbhafn. 1651. 4to.

19 Hieronym. Megiſeri Septentrio Nov-antiquus, ſive die neue Nord-welt Iſland, Groenland, &c. Leipz. 1653. 12mo.

20 Edda Iſlandorum A. C. 1215, per Snorronem Sturlæ Iſlandice conſcripta, Iſlandice, Danice, et Latine edita, opera P. J. Reſenii. Hafn. 1665. 4to. together with

21 Philoſophia antiquiſſima Norvego-danica dict. Voluſpa, quæ eſt pars Eddæ Sæmundi, primum publici juris facta a P. J. Reſenio. Hafn. 1665. together with

22 Ethica Odini, pars Eddæ Sæmundi, vocata Haaramal, edita per P. J. Reſenium. Hafn. 665.

23 Theod. Thorlacci diſſ. chorographica hiſtorica de Iſlandia, præs. Ægid. Strauch. Wittent 1666 and 1670. 4to. item 1690. 4to.

24 Erici

24 Erici Bartholini experimenta Chriſtalli Iſlandici diſdiaclaſtici. Hafn. 1699. 4to.
25 Voluſpa. Kiöbenhavn. 1673. 4to.
26 Martiniere neue Reiſe in die nordiſchen Landſchaften. Hamb. 1675. 4to. Tranſlated from the Engliſh. There is likewiſe a French edition. Paris 1682.
27 Aræ Multiſtii Schedæ. Skalholt 1688. 4to. Oxford 1696. Kiob. 1733. 4to.
28 Landnama Bok. Skalholt 1688. 4to. Is likewiſe publiſhed at Copenhagen, with a Latin tranſlation, notes, and ſeveral indexes. Iſlands Landnama-Bok, h. e. Liber originum Iſlandiæ. Editio noviſſima, ex manuſcriptis Magnæanis ſumptibus perill. Suhmii. Havn. 1774. 4to.
29 Gahm de ratione anni ſolaris apud veteres Iſlandos. This memoir is printed at the end of Aræ Schedæ in the Copenhagen edition.
30 Thordi Thorlaks Diſſ. de ultimo montis Hecklæ in Iſlandia incendio. Hafn. 1694.
31 Gahm de prima religionis in Iſlandia fundatione. Hafn. 1696.
32 Deſcription du Nord. 1698. 12mo.
33 Niewe beſchryvinge van Spitſbergen, Iſland, Groenland end de beygelegen Eylanden.
34 Einar Thorſt. vita. Hafn. 1700.
35 Reiſe nach Norden, worinnen die ſitten, Lebenſarten and Aberglauben der Norwegen——and Iſlander accurat beſchrieben werden. Leipz. 1711. 12mo.
36 Blefkenii Hiſtorie van Lap-and Finland, hier is bygevoegt de beſchryving van Isen Groenland. Leuvarden 1716. 8vo.
37 Vetterſten de Poeſi Scaldorum Septentrionalium. Upſal. 1717. 8vo.
38 Relation om det foerſkrekkelige Vandfall og exundation af Bierget Katlegiaa paa Iſland 1721. Copenhagen 1727. 4to.
39 Kort berættelſe on berget Krabla paa Iſland, ſamt andre Derneſs intil grantſande Berg, Hwilka nyligen begynt at inſpruta eld och brinna. This account of the burning of the mount Krabla was printed probably in the year 1727, at Stockholm, in four pages in 8vo.
40 Benedict Thorſtenſon effterrettning om den jordbrand ſom 1724 og folgende Aar i Bierget Krafla og de dar omkring liggende Herreder har graſſeret. Kiöbenhafn 1726. 8vo.
41 Olavi O. Nording Diſſ. de Eddis Iſlandicis. Upſal. 1735. 4to. Mr. Oelrichs at Bremen has reprinted this Diſſ. in his Opuſculis Daniæ et Sueciæ litteratæ, tom I. 1774.
42 Joh. Dav. Koehler proluſio de Scaldis ſeu poetis gentium arctoarum. Altdorf 1738. 4to.
43 Er. Jul. Biörner, Inledning til de Hfwerborna Goeters gamla Hafder ſar deles gotiſka ſprakets Forman och Sagornas Kanned om. ſeu, Introductio in Antiquitates Hyperboreo-Gothicas. Stockholm 1738. fol.
44 Ejuſd. tractatus de Varegis heroibus Scandianis. Stockholm 1743. 4to.
45 Lakmannus de computatione annorum per hyemes priſcis gentibus hyperboreis uſitata. Kiel 1744. 4to.
46 De Yfverborna Atlingars Lara——Hyperboreorum Atlandiorum ſeu Suiogotorum et Nordmandorum Edda, hoc eſt Atavia, ſeu fons gentilis illorum et Theologiæ et Philoſophiæ. Jam demum verſione Suinonica donata accedente latina—ad MS. quod poſſidet Bibliotheca Upſalienſis—opera Joh. Gorſſon. Upſ. 1746. 4to. This edition of the Edda was not finiſhed.
47 Iſlanſka taxan. Hoolum 1746. 4to.
48 John Anderſſon Nachrichten von Iſland, Groenanland, und der Straſſe David. Hamb. 1746. It likewiſe appeared tranſlated into the Daniſh language. Copenh.

1748. A French tranſlation has likewiſe been publiſhed by Mr. Selſius, 1751. 12mo. 2 vols.

49 Octroy foer det Iſlandſke Societet. Kiöb. 1747. 8vo.

50 Avertiſſement om Anderſſons Tractat om Iſland. Kiöb. 1748. 8vo.

51 Joh. Thorkelſſons tillgift til Andorſſon om Iſland. Kiöb. 1748. 8vo.

52 Eggerhard Olavius Enarrationes hiſtoricæ de Iſlandiæ natura et conſtitutione. Hafn. 1749. 8vo.

53 Ejuſd. Diſſ. de ortu et progreſſu circa ignem Iſlandiæ ſubterraneum. Hafn. 1749. 4to.

54 Biarni Pauli Obſervationes de alga ſaccharifera maris Iſlandici. Hafn. 1749. 8vo.

55 Arnae Oddeſ. vita, inſerted in the Nova literaria. Hafn. anni 1750.

56 De Gamla Normanners Patriarkaliſka Lara pa Swenſka och Lat. af Joh. Gooranſſon. Stockholm 1750. 4to.

57 Olai Wormii Epiſtolæ. Hafn. 1751. 2 vols. 8vo.

58 Tilforladeliga efterretningar om Iſland med ett nytt Landkort, og 2 Aars metereologiſka Obſervationer af Niels Horrebow. Kiöb. 1750. 8vo. This performance is likewiſe tranſlated into German 1752. 8vo. and into Engliſh.

59 Specimen Iſlandiæ non barbaræ, in nouvellis literariis Hafnienſibus 1752.

60 Nachrichten von Iſland, a ſhort abſtract of Horrebow's book inſerted in a periodical paper, called Betraygen zum Nutzen und Vergnugen. Griefswald 1753. 4to.

61 Erici tentamen de nominibus et cognominibus Septentrionalium. Hafn. 1753. 8vo.

62 Th. Nicolai de commeatu Iſlandorum navali. 1753. 8vo.

63 Svein Solveſen Tyro Juris Iſlandicus. Kiöb. 1754. 8vo.

64 Vidalins Bref til Jon Arneſen de jure patronatus Iſlandorum, tranſlated into Daniſh, and publiſhed by Magnus Ketilſon.

65 Diſſertatiuncula de montibus Iſlandiæ cryſtallinis, auct. Theodr Torkelli I. Vidalino, ſcholæ Skalholtenſis eo tempore Rectore. Tranſlated from the Latin MS. into German, and publiſhed in the Hamburg Magazine, volume XIII. N° I. and II. 1754. 8vo.

66 Diſquiſitiones duæ hiſtoricæ antiquariæ. Prior de veterum Septentrionalium, imprimis Iſlandorum peregrinationibus; poſterior de Phillippia ſeu amoris equini apud priſcos boreales cauſis——per. Joh. Erici. Lipſ. 1755. 8vo. The firſt is tranſlated into German, and inſerted into Schlozer's Northern Hiſtory. 1771. p. 566.

67 Ejuſd. Specimen Obſervationum ad antiquitates Septentrional.

68 Ejuſd. Commentarius de expoſitione infantum ad veteres Septentrionales.

69 Introduction à l'Hiſtoire de Dannemark, par Mr. Mallet à Copenh. 1755. 4to. to which a tranſlation of the Edda is prefixed. The ſame is tranſlated into Engliſh, 2 vols. 8vo. and into German. Griefswald 1765. 4to.

70 Joh. Snorronis de Agricultura Iſlandorum. Hafn. 1757. 8vo.

71 Hald. Jacobſens eftterreningar om de i. Iſland ildſprudende Bierge. Kiöb. 1757. 8vo.

72 Ol. Eigilſon's Berettnelſe om de tyrkiſke Soerovere i. Iſland. Kioeb. 1757. 8vo.

73 Nic. Pet. Sibbern idea hiſtoriæ litterariæ Iſlandorum in Dreyer's Monument anecdota. I Tom. Lubecæ 1760. 4to.

74 Balle oekonomiſka Tanker ofwer Iſland til hoyere betankning. Kiöb. 1760, 1761. 2 vols. 8vo.

75 Joh. Finnæus tentamen hiſtorico-philologicum circua Norvegiæ jus eccleſiaſticum priſcum, and

76 Ejuſ. Curæ poſteriores in hoc jus. Hafn. 1762 and 1765. 4to.

77 Thorſten Nicol. de commeatu veterum Iſlandorum reſtituendo. Hafn. 1762. 8vo.

78 Joh. Arneſon Inledning til den gamle og nya Iſlandſke Rattegaang, udgiven af I. Erichſen. Kiöb. 1762. 4to.
79 Ioach. Stechau de fide hiſtorica monumentor. Iſlandic. Lund. 1763.
80 Five pieces of Runic poetry, tranſlated from the Icelandic language. London 1763. 8vo.
81 M. Olafsen's foerſoeg til Landraſenets forbedring i Iſland. Kiöb. 1765. 8vo.
82 Ejuſd. Anmarkningar till Jons boks Danſka ofwerſattelſe. Kiöb. 1765. 8vo.
83 Egil Thorhalſens forſwar for ſin ofwerſattelſe. Kiöb. 1765. 8vo.
84 H. Finnſen efterettning om tilgragelſerne vid Bierget Hekla udi Iſland i April og foljende manader. Kioeb. 1767.
85 Olavii Syntagma de Baptiſmo veterum. Hafn. 1769. 4to.
86 Breve om Agerdyrknings muelghed i Iſland fra Hans Finnſen 1769 and 1772.
87 Joh. Peterſen om den ſaa Kallade Iſlandſke ſkiorbiugg. Soroe 1769. 8vo.
88 Erichſen om Iſlands up Komſt. Kioebenhhafn 1770. 4to.
89 Skuli Magnuſſon um thann Iſlenſka Garnſpuna. Kiöb. 8vo.
90 Ol. Olafsens Iſlanſk Urtagaards bok. Kioeb. 1770. 8vo.
91 Thor Oddeſons tanker om akurdyrkin paa Iſland. Kiöb. 1771. 8vo.
92 Iuel Norrlands Trompet.
93 Martefeld om Iſlands Huuſholding med fedhe vahre og Hamborgs Kiodrogning. Kiöb. 1771. 8vo.
94 Ol. Olſon um fiſki-veidar og fiſki-nettan. Kiöb. 1771. 12mo.
95 Upartiſke tanker om det Iſlandſke Handels-Kompagnie og dets farende Kiobmand. Kiöb. 1771.
96 Anmerkningar oever Compagniets Handel paa Iſland. Kiöb. 1771.
97 Lud. Harboe Tuende ofhandlingar om reformationem i Iſland.
98 Ejuſd. Hiſtory of the Iſlandic tranſlation of the Bible.
99 Finnei Johannæi, Epiſcopi Dioceſeos Skalholtinæ in Iſlandia, Hiſtoria Eccleſiaſtica Iſlandiæ. T. I. II. III. Hafn. 1772 & 1775.
100 Ion Olſſon om den Iſlandſke Handel. Kiöb. 1772. 8vo.
101 Bref til Hr. Cancellie Radet Lagerbring rorande then Iſlandſk Edda (by Cevalier Ihre). Stock. 1772. 8vo.
102 Relation d'un Voyage dans la Mer du Nord par de Kerguelen de Tremarec. Amſterdam 1772. 4to.
103 Eggert Olafsens og Biarne Povelſens Reiſe igienem Iſland, 2 vols. Soroe 1772. 4to. It appeared likewiſe tranſlated into German. Leipz. 1774 and 1775. 4to. 2 vols.
104 Steph. Thoraſens de homicidis ſecundum leges Iſlandorum antiquas. P. I. Hafn. 1773.
105 Kriſtni Saga, S. Hiſtoria Religionis Chriſtianæ in Iſlandiam introductæ, nec non: Thattr af Iſleif Biſkupi, ſ. narratio de Iſleifo Epiſcopo—cum interpretatione Latina, notis, &c. Hafn. 1773. 8vo.
106 Iſlandiſche Literatur und Geſchichete. Erſter Theil. Goettingen 1773. 8vo. The ingenious Prof. Schlozer at Gottingen is the author.
107 Iſlandiſche Zeitungen. Theſe newſpapers were publiſhed in Iceland in the year 1775.
108 Bualagen. Hrappſej. 1775.
109 Biörn a Skardzaa Annalar Hrappſej. 1774 and 1775. 4to. 2 vols. Theſe annals contain the hiſtory from 1400 to 1645; and are publiſhed with a Latin tranſ-

lation: Annales Biörnis a Skardſa. Ex manuſcriptis inter ſe collatis cum interpretatione Latina, variantibus lectionibus, notis et indice.

110 Kriſtin-rettr hinn gamli—Jus Eccleſiaſticum vetus ſ. Thorlacco-Kettilianum conſtitutum, A. C. 1123, Iſlandice et Latine, edit Grimus Joh. Thorkelin. Hafn. 1775.

111 Berattelſe om den Iſlandſke farſkiotſeln, upſatt af Theod. Thoroddi. Theſe obſervations appeared tranſlated into Swediſh by Mr. Barchaus, in the Journal of huſbandry 1776, the month of November. Stockh.

112 Vorlaufender Bericht und zugleich die Vorrede von der alten und raren Iſlandiſchen Edda, ſo uber 700 Jahr und daruber in Norden biſher unerklarbar verſteckt gelegen. Stettin 1776. 4to. Its author is Mr. Schimmelmann of Stettin, who likewiſe had printed in 1774; Abhandlung abgefaſst in einem Schreiben an einen Gelehrten von der alten Iſlandiſchen Edda. 4to.

113 Sven Sölveſen Iſlandiſke Jus criminale. Kiöb. 1776. 8vo.

114 Iſlandiſche Merkwurdigkeiten, in a periodical paper called Mannichfaltigkeiten, firſt year ſecond quarter, Berlin 1777. 8vo.

115 Sciagraphia Hiſtoriæ litterariæ Iſlandiæ, auctorum et ſcriptorum tum editorum tum ineditorum indicem exhibens, cuivis delineandæ periculum fecit Haldanus Einari, Ph. Mag. et Rector Scholæ Cathedr. Holenſis. Holmiæ 1777. 8vo.

116 Modern Hiſtory of the Polar Regions. The firſt part is to be met with in Richer's Modern Hiſtory, or Continuation to Rollin's Antient hiſtory, Vol. XXVII. Berlin 1778. 8vo.

117 Diſſ. inauguralis de Lichene Iſlandico, Præſ. Trommſdorff. Reſp. Reiſſe. Erfurth. 1778.

118 Die Iſlandiſche Edda. Das iſt: die geheime Gotteſlehre der ælteſten Hyperboraer-im Jahr. 1070—1075, aus alten runiſthen Schriften edirt von Samund Froden, hiernæchſt im Jahr 1664, durch Reſen, und nun in die hochtentſche Sprache mit einem Verſuch zur rechten Erklarung uberſezt und edirt von J. Schimmelmann. Stettin, 1778. 4to.

119 Bref rærande en Reſa til Iſland 1772. Upſala. 1777. 8vo. and tranſlated into German by Joh. George Pet. Moelle. Upſala and Leipz. 1779. 8vo. The work which is now here appears tranſlated into Engliſh.

120 Joh. Theod. Phil. Chriſt. Ebeling de Quaſſia et Lichene Iſlandico. Glaſgoæ, 1779. 8vo.

This Catalogue contains all the writers of any conſequence on Iceland, or on matters relative to, or concerning that country.

LETTER I.—TO PROFESSOR BERGMAN*

On the Effects of Fire in Iceland.

SIR,

SINCE I am happily returned from a very pleaſant ſummer's excurſion through the weſtern iſlands of Scotland, to Iceland and the Orkneys, it is with peculiar pleaſure that I take this opportunity of aſſuring you of my eſteem and friendſhip. It is probably

* This letter was firſt publiſhed in the year 1773, in the Upſala newſpapers, No. 3, 4, 6, and 8.

not

not unknown to you, that Mr. Banks and Dr. Solander have been diſagreeably diſappointed when they were on the point of ſetting out on a new voyage round the world laſt ſummer. However, in order to keep together and employ the draughtſmen and other perſons whom they had engaged for their voyage to the South-Sea, they reſolved upon another excurſion. It was impoſſible to chuſe a better one than that to Iceland; and you may eaſily conceive, Sir, that though I was ready to ſet out on my return to Sweden, I did not heſitate a moment in accepting their offer to accompany them. To ſay the truth, I was glad to viſit a country where I could not alone hope to find many remains of our ancient language, but where I was certain to ſee nature in a new point of view.

I have not been diſappointed in either of my expectations; and I could never have found a happier opportunity than that of making this voyage in the company of Mr. Banks and Dr. Solander, of whom it would be unneceſſary to ſay one word more, as they are both known ſo well to you, and to the learned and ingenious throughout Europe.

I know, Sir, that every information will be welcome to you, which concerns thoſe objects that attracted my attention there; and there is no one who would communicate this information to you with more pleaſure than myſelf; but as it would require too much prolixity to mention every thing, I ſhall only in this letter ſpeak of the principal operations of fire in Iceland, a ſubject which, I am convinced, is one of the moſt important.

On our arrival in Iceland on the twenty-eighth of Auguſt 1772, we directly ſaw a proſpect before us, which, though not pleaſing, was uncommon and ſurprizing. Whatever preſented itſelf to our view bore the marks of devaſtation; and our eyes, accuſtomed to behold the pleaſing coaſts of England, now ſaw nothing but the veſtiges of the operation of a fire, heaven knows how ancient!

The deſcription of a country, where quite cloſe to the ſea you perceive almoſt nothing but ſharp cliffs vitrified by fire, and where the eye loſes itſelf in high rocky mountains covered with eternal ſnow, cannot poſſibly produce ſuch emotions as at firſt ſight might entirely prepoſſeſs the thinking ſpectator. It is true, beauty is pleaſing both to our eyes and our thoughts; but gigantic nature often makes the moſt laſting impreſſions.

We caſt anchor not far from Beſſeſtedr, the dwelling-place of the celebrated Steurleſon, where we found two tracts of lava, called *Gorde* and *Hualeyre-Hraun* (for what we and the Italians call Lava, is called in Iceland *Hraun* from *Hrinna*, to flow) of which particularly the laſt was remarkable, ſince we found there beſides a whole field covered with lava, which muſt have been liquid in the higheſt degree, and whole mountains of turf. Chance had directed us exactly to a ſpot on which we could better than on any other part of Iceland, conſider the operations of a fire which had laid waſte a ſtretch of ten or twelve miles*. We ſpent ſeveral days here, in examining every thing with ſo much the more pleaſure, ſince we found ourſelves, as it were, in a new world.

We had now ſeen almoſt all the effects of a volcano, except the crater, from which the fire had proceeded: in order therefore to examine this likewiſe, we undertook a journey of twelve days to mount Heckla itſelf; we travelled fifty or ſixty miles† over an uninterrupted track of lava, and had at laſt the pleaſure of being the firſt who ever reached the ſummit of this celebrated volcano. The cauſe that no one has been there

* The miles mentioned by Dr. Troil are always Swediſh, ten and an half of which are equal to a degree on one of the great circles of the globe; and therefore one Swediſh mile is nearly equal to ſix Engliſh ſtatute miles. Ten or twelve miles are ſixty or ſeventy-two Engliſh miles.

† Three hundred or three hundred and ſixty Engliſh miles.

before,

before, is partly founded in ſuperſtition, and partly in the extreme difficulty of the aſcent, before the laſt diſcharge of fire. There was not one in our company who did not wiſh to have his cloaths a little ſinged, only for the ſake of ſeeing Heckla in a blaze; and we almoſt flattered ourſelves with this hope, ſince the biſhop of Skalholt had informed us by letter, in the night between the fifth and ſixth of September, the day before our arrival, flames had proceeded from it; but now the mountain was more quiet than we wiſhed. We however paſſed our time very agreeably, from one o'clock in the night till two next day, in viſiting the mountain. We were even ſo happy, that the clouds which covered the greateſt part of it diſperſed towards evening, and procured us the moſt extenſive proſpect imaginable. The mountain is ſomewhat above five thouſand feet high, and ſeparates at the top into three points, of which that in the middle is the higheſt. The moſt inconſiderable part of the mountain conſiſts of lava, the reſt are aſhes, with hard ſolid ſtones thrown from the craters, together with ſome pumice-ſtones, of which we found only a ſmall piece, with a little native ſulphur. A deſcription of the various kinds of ſtones that are to be found here would be too prolix, and partly unintelligible; and I ſo much the more willingly omit it, as I hope to ſatisfy your curioſity, as ſoon as the collection I made of them arrives in Sweden.

Amongſt many other openings, four were peculiarly remarkable; the firſt, the lava of which had taken the form of chimney-ſtacks half broken down; another, from which water had ſtreamed; a third, all the ſtones of which were red as brick; and laſtly, one from which the lava had burſt forth in a ſtream, which was divided at ſome diſtance into three arms. I have ſaid before, that we were not ſo happy to ſee Heckla throw up fire; but there were ſufficient traces of its burning inwardly; for on the upper half of it, covered over with four or five inches deep of ſnow, we frequently obſerved ſpots without any ſnow; and on the higheſt point, where Fahrenheit's thermometer was at 24° in the air, it roſe to 153° when it was ſet down on the ground; and in ſome little holes it was ſo hot that we could no longer obſerve the heat with a ſmall pocket thermometer. It is not known whether, ſince the year 1693, Heckla has been burning till 1766, when it began to throw up flames on the firſt of April, and was burning for a long while, and deſtroyed the country many miles around. Laſt December ſome flames likewiſe proceeded from it; and the people in the neighbourhood believe it will begin to burn again very ſoon, as they pretend to have obſerved, that the rivers thereabouts are drying up. It is believed that this proceeds from the mountain's attracting the water, and is conſidered as a certain ſign of an impending eruption. Beſides this, the mountains of Mayvatn and Kattlegia are known in this century, on account of the violent inflammations of the former, between the years 1730 and 1740, and the latter in 1756.

But permit me, Sir, to omit a farther account of the volcano at this time *, in order to ſpeak of another effect of the fire, which is much finer, and as wonderful as the firſt, and ſo muſt be the more remarkable, as there is not in any part of the known world any thing which reſembles it; I mean the hot ſprings of water which abound in Iceland †.

They have different degrees of warmth, and are on that account divided by the inhabitants themſelves into *laugar*, warm baths, and *huerer*, or *jets d'eaux*; the firſt are found in ſeveral other parts of Europe, though I do not believe that they are even employed to the ſame purpoſes in any other place; that is to ſay, the inhabitants do not

* Dr. Troil treats more at large of the Icelandic volcanos in his 18th and 19th Letters; and in the 20th he ſpeaks more particularly of Mount Heckla.

† The 21ſt Letter treats more fully of the hot ſprings in Iceland.

bathe

bathe in them here merely for their health, but they are likewiſe the occaſion for a ſcene of gallantry. Poverty prevents here the lover from making preſents to his fair one, and nature preſents no flowers of which elſewhere garlands are made: it is therefore cuſtomary, that inſtead of all this, the ſwain perfectly cleanſes one of theſe baths, which is afterwards honoured with the viſits of his bride. The other kind of ſprings mentioned above deſerves more attention. I have ſeen a great number of them; but will only ſay ſomething of three of the moſt remarkable. Near Laugervatn, a ſmall lake of about a mile in circumference, which is about two days journey diſtant from Heckla, I ſaw the firſt hot jet d'eau; and I muſt confeſs that it was one of the moſt beautiful ſights I ever beheld. The morning was uncommonly clear, and the ſun had already begun to gild the tops of the neighbouring mountains; it was ſo perfect a calm, that the lake on which ſome ſwans were ſwimming was as ſmooth as a looking-glaſs; and round about it aroſe, in eight different places, the ſteam of the hot ſprings, which loſt itſelf high in the air.

Water was ſpouting from all theſe ſprings; but one in particular continually threw up a column from eighteen to twenty-four feet high, and from ſix to eight feet diameter, the water was extremely hot. A piece of mutton and ſome ſalmon trouts we boiled in it; as likewiſe a ptarmigan, which was almoſt boiled to pieces in ſix minutes, and taſted excellently. I wiſh it was in my power, Sir, to give you ſuch a deſcription of this place as it deſerves; but I fear mine would always remain inferior in point of expreſſion. So much is certain, at leaſt, nature never drew from any one a more cheerful homage to her great Creator than I here paid him.

At Reikum was another ſpout of the ſame ſort, the water of which, I was aſſured, roſe to ſixty or ſeventy feet perpendicular height ſome years ago; but a fall of earth having almoſt covered the whole opening, it now only ſpouted between fifty-four and ſixty feet ſideways. We found a great many petrified leaves in this place, as likewiſe ſome native ſulphur, of which too the water had a much ſtronger taſte than any where elſe.

I have reſerved the moſt remarkable water-ſpout for the end; the deſcription of which will appear as incredible to you as it did to me, could I not aſſure you that it is all perfectly true, as I would not aver any thing but what I have ſeen myſelf. At Geyſer, not far from Skallholt, one of the epiſcopal ſees in Iceland, a moſt extraordinary large jet d'eau is to be ſeen, with which the celebrated water-works at Marly and St. Cloud, and at Gaſſel, and Herrenhauſen, near Hanover, can hardly be compared. One ſees here, within the circumference of half a mile*, forty or fifty boiling ſprings together, which, I believe, all proceed from one and the ſame reſervoir. In ſome the water is perfectly clear, in others thick and clayey; in ſome, where it paſſes through a fine ochre, it is tinged red as ſcarlet; and in others, where it flows over a paler clay, it is white as milk.

The water ſpouts up from all, from ſome continually, from others only at intervals. The largeſt ſpring, which is in the middle, engaged our attention particularly the whole day, which we ſpent here from ſix in the morning till ſeven at night. The aperture through which the water aroſe, and the depth of which I cannot determine, was nineteen feet in diameter; round the top of it is a baſon, which, together with the pipe, has the form of a cauldron; the margin of the baſon is upwards of nine feet one inch higher than the conduit, and its diameter is of fifty-ſix feet. Here the water does not ſpout continually, but only by intervals ſeveral times a day; and as I was informed by the people in the neighbourhood, in bad rainy weather, higher than at other times.

* About three Engliſh miles.

On

On the day that we were there, the water ſpouted at ten different times, from ſix in the morning till eleven A. M. each time, to the height of between five and ten fathoms; till then the water had not riſen above the margin of the pipe, but now it began by degrees to fill the upper baſon, and at laſt ran over. The people who were with us told us, that the water would ſoon ſpout up much higher than it had till then done, and this appeared very credible to us. To determine its height, therefore, with the utmoſt accuracy, Dr. Lind, who had accompanied us on this voyage in the capacity of an aſtronomer, ſet up his quadrant.

Soon after four o'clock we obſerved that the earth began to tremble in three different places, as likewiſe the top of a mountain, which was about three hundred fathoms diſtant from the mouth of the ſpring. We alſo frequently heard a ſubterraneous noiſe like the diſcharge of a cannon; and immediately after a column of water ſpouted from the opening, which at a great height divided itſelf into ſeveral rays, and according to the obſervations made with the quadrant, was ninety-two feet high. Our great ſurpriſe at this uncommon force of the air and fire was yet increaſed, when many ſtones, which we had thrown into the aperture, were thrown up with the ſpouting water. You can eaſily conceive, Sir, with how much pleaſure we ſpent the day here; and indeed I am not much ſurpriſed, that a people ſo much inclined to ſuperſtition as the Icelanders are, imagine this to be the entrance of hell; for this reaſon they ſeldom paſs one of theſe openings without ſpitting into it; and, as they ſay, *uti fandens mun*, into the devil's mouth.

But I think it is time to finiſh my long letter, and I will only try your patience with one thing more, which likewiſe deſerves to be better known. Natural hiſtorians have always obſerved thoſe large remarkable pillars, which the hand of nature has prepared in Iceland, and in ſome other places, with the greateſt attention. The Giant's Cauſeway has, till now, been conſidered as the largeſt and moſt regular aſſemblage of theſe columns; but we have diſcovered one on our expedition through the weſtern iſlands of Scotland, which infinitely ſurpaſſes it. The whole iſland of Staffa* conſiſts almoſt entirely of theſe pillars, which are as regular as can be imagined; they ſeem to be of the ſame ſubſtance as the Iriſh ones, and have from three to ſeven ſides; each pillar is ſurrounded by others, that join ſo cloſely to it, as to have a very ſmall ſpace between them, which is frequently filled up with a chryſtallized incruſtration. In moſt places the pillars are perpendicular; in others they are a little inclined, and yet in others they have the configuration of the timber-work in the inſide of a ſhip. The higheſt pillar was fifty-five feet one inch long, and each joint from one to two feet. There is a cavern here which conſiſts entirely of theſe pillars; it is 367 feet long, 53,7 broad, and 117,6 high. There are three fathoms of water in it, ſo that it is eaſy to enter into it with a boat.

It is difficult to determine the queſtion, how theſe pillars have been formed; but it is more than probable, nay almoſt certain, that they are the remains of an ancient volcano, many indiſputable tracts of which are found in many parts of Scotland. You muſt not in this place apply to me the ſtory Helvetius tells of a clergyman and a fine lady, who together obſerved the ſpots in the moon, which the former took for church ſteeples, and the latter for a pair of happy lovers. I know that we frequently imagine to have really found what we moſt think of, or moſt wiſh for; but I ſincerely aſſure you, that I do

* See the account of Staffa, by Joſeph Banks, Eſq. inſerted in Pennant's Tour in Scotland, and Voyage to the Hebrides, 1772, page 299, 309, and the fine repreſentations of theſe baſalts, executed after the accurate drawings executed by Mr. John Frederick Miller, employed by Mr. Banks, and communicated by the laſt-mentioned gentleman, for the adorning of Mr. Pennant's Scots Tour.

not ſpeak of ſuch fires without the moſt deciſive opinions. I will, however, reſerve a further account of theſe extraordinary productions till my return home, when I flatter myſelf I ſhall be able to give you entire ſatisfaction.

LETTER II.—TO THE ROYAL LIBRARIAN MR. GJÖRWELL.

Of Iceland in general.

SIR, Utrecht, Jan. 22, 1773.

You are, no doubt, informed of the voyage Mr. Banks and Dr. Solander undertook laſt ſummer to Iceland, as well as my having accompanied theſe gentlemen on that expedition. I need not tell you what reaſons determined me to become one of their company. You can eaſily conceive how many different circumſtances might have perſuaded a curious Swede to viſit a country remarkable in ſo many reſpects; I am perfectly ſatisfied with my voyage, and can eaſily convince you of it, by communicating to you ſome little account of what principally attracted our attention during its courſe.

We ſet ſail from London on the twelfth of July laſt in a ſhip, for which one hundred pounds ſterling were paid every month. Beſides Mr. Banks, Dr. Solander, and myſelf, we had on board an aſtronomer *, a lieutenant in the navy (a very worthy man, his name is Gore, and deſerves to be mentioned, as he is, as far as we know, the firſt who has ſailed three times round the world†), together with a lieutenant, three draughtſmen, and two writers, who, with the ſeamen and ſervants, made about forty people.

We firſt landed on the Iſle of Wight, which is a little paradiſe, where we ſpent two days. Nature ſeems to have ſpared none of her favours in embelliſhing it; and I know no place in it which does not preſent a pleaſing view to the obſerver. The inhabitants reſemble their iſland; they live in a little community among themſelves; they are not very rich, neither have they any beggars. They are generally cheerful, cleanly, and obliging; and there are but few inſtances among them of any one marrying a perſon who did not at that time reſide or afterwards ſettle on the iſland.

From thence we ſailed to Plymouth, where we ſaw the docks, magazines, and every thing belonging to them worthy of notice, and then proceeded towards St. George's Channel.

We had intended to land on the Iſle of Man, as it is one of the few places where the Runic characters have been brought by the Danes, and the only one, except the north, where ſome of our old Runic ſtones are found; but at ſea we cannot always act according to our pleaſure: the wind obliged us to leave the Iſle of Man on our right, and to continue our courſe to the weſtern iſlands of Scotland.

It is exceedingly pleaſant to ſail among theſe iſlands, though not very ſafe, without a good wind and expert pilots: for in the firſt caſe you muſt depend upon the ebb and flood; and in the ſecond you are in continual danger on account of the great number of rocks.

The nature of the country is ſuch, that I do not wonder at its having given birth to a Fingal, and an Oſſian. It is not the only place where we have ſeen heroes pro-

* Dr. James Lind, of Edinburgh, who is well known by many memoirs inſerted in the Philoſophical Tranſactions, and other ingenious publications.

† Captain Dampier did it a long time before Mr. Gore, viz. Cowley and Dampier, 1683, 1684; Dampier and Funnel, 1689, 1691; Woodes, Rogers, and Dampier, 1708, 1711. If Lieutenant Gore and Captain Charles Clerk return ſafe home from the voyage they are now engaged in, they both will have ſailed four times round the world.

duced among the mountains; and what can be more calculated to form a poet, than wild romantic and enchanting ſcenes of nature, which are here ſo pleaſingly blended.

It would be tedious to enumerate all the iſles we have viſited. The moſt remarkable are Oranſay and Columſkill, on account of their antiquities; Scarba, for its known water-drain, (Vatta-drag); and Staffa, on account of its natural pillars, which hitherto have been little known, and ſurpaſs whatever has been obſerved before of the kind.

You know, Sir, that the inhabitants of theſe iſles, as well as in the Highlands of Scotland, have a language of their own, which they call Erſe, and which is a remnant of the Celtic. In this language Oſſian wrote his admirable poems; and though the inhabitants cannot at preſent produce any thing comparable to them, yet I hope, on my return home, to give you proofs of their being able to write both with elegance and ſentimental feelings. As it is very extraordinary that this language ſhould have preſerved itſelf here ſo long*, it will perhaps not be diſagreeable to you to be more particularly acquainted of the limits within which it is confined. I will readily ſketch them out to you, being able to do it with ſo much the more certainty, having received my information from Mr. Macpherſon, the only man in England who has particularly ſtudied this language.

It begins to be ſpoken on the eaſtern ſide at Nairn, and extends from thence through the whole country, and all the weſtern iſles. In the north its limits are at Caithneſs, where Erſe is only ſpoken in four pariſhes out of ten; in the other ſix, better Engliſh is ſpoken than in any other part of Scotland. There is in Ireland another dialect of it, as well as in Wales and Britany; however, they are not ſo different, but a man born in either of theſe provinces, may make himſelf underſtood in the others. Had I been acquainted with the language of the Dalikarlians, I ſhould have had an opportunity of examining how far that ſimilarity is founded which, as it appeared to my ear, ſubſiſts between theſe two languages.

The country abounds with northern antiquities, ſuch as caſtles, ſtrong-holds, burying-places, and monuments, (Bautaſteinar); and the people, who are obliging and extremely hoſpitable, have a number of cuſtoms reſembling thoſe obſerved by our country-people, ſuch as the celebration of the firſt of May †, and many others.

We now left theſe iſlands, and continuing our voyage arrived at laſt, on the twenty-eighth of Auguſt, at Iceland, where we caſt anchor at Beſſeſtedr, formerly the dwelling-

* The very little connection which the antient inhabitants of the Scots Highlands and of the Hebrides had with other nations (eſpecially before the Union, which has in every reſpect been beneficial to them) is the true cauſe that the Erſe language has ſo long been preſerved among them. Beſides theſe reaſons there is another, which accounts almoſt for them all; the poverty of the ſoil and inclemency of climate admit of very little cultivation, ſo that theſe parts have very few natural productions which might tempt foreigners to viſit them: ſome few gifts of nature are, no doubt, lodged in the boſom of the Scots hills; but hitherto indolence and want of induſtry in the natives have neglected theſe riches: within a few years only it is that commerce has begun to raiſe its head, which alone induces other nations to frequent this or any country. It is therefore not ſo very extraordinary, that in a mountainous country the remains of ancient nations ſhould be found, who long preſerve their language. In the Caucaſus are ſtill exiſting the poſterity of ſeveral nations who croſſed theſe mountains in their attempt to conquer Aſia and Europe, and within a ſmall compaſs, more than five or ſix different languages are ſpoken.

† It is called in Sweden *war Fruday; le jour de notre Dame*, our Lady's Day. The witches are ſuppoſed to take, in the night preceding that day, their flight to Blakulla, a famous mountain; but it was formerly believed in Germany, that the witches travelled to the Bloxberg or Brocken, a high mountain contiguous to the Hartz foreſt. In Sweden the ſpring comes on about this time, and of conſequence the hard labour of ploughing, mowing, and reaping follow one another from that time, and require the beſt exertion of the ſtrength of the huſbandmen, to which they prepare themſelves on this day by frequent libations of their ſtrong ale, and they uſually ſay, *Maſte man dricka marg i benen*; You muſt drink marrow in your bones.

place

place of the famous Sturleſon. We ſeemed here to be in another world; inſtead of the fine proſpects with which we had fed our eyes, we now only ſaw the horrid remains of many devaſtations. Imagine to yourſelf a country, which from one end to the other preſents to your view only barren mountains, whoſe ſummits are covered with eternal ſnow, and between them fields divided by vitrified cliffs, whoſe high and ſharp points ſeem to vie with each other, to deprive you of the ſight of a little graſs which ſcantily ſprings up among them. The ſame dreary rocks likewiſe conceal the few ſcattered habitations of the natives; and no where a ſingle tree appears, which might afford ſhelter to friendſhip and innocence. I ſuppoſe, Sir, this will not inſpire you with any great inclination of becoming an inhabitant of Iceland; and indeed at firſt ſight of ſuch a country one is tempted to believe that it is impoſſible it ſhould be inhabited by any human creature, if one did not ſee the ſea, near the ſhores, every where covered with boats.

Though there is ſcarcely any country ſo little favoured by nature, and where ſhe appears throughout in ſo dreadful a form, yet Iceland contains about ſixty thouſand people, who cannot properly be called unhappy, though they are unacquainted with what in other places conſtitutes happineſs. I ſpent there above ſix weeks with the greateſt pleaſure, partly in ſtudying one of the moſt extraordinary ſituations of nature, and partly in collecting information from the natives, concerning their language, manners, &c. &c. As to the former, I have treated of it in a letter to profeſſor Bergman, which I doubt not he will communicate to you with pleaſure, if you deſire it. Of the latter I will here mention ſome particulars.

You know, Sir, that Iceland firſt began to be cultivated in the eleventh century by a Norwegian colony, among which were many Swedes. They remained perfectly free in this corner of the world for a long time; but were, however, at laſt obliged to ſubmit to the Norwegian kings, and afterwards became ſubject, together with Norway, to the kings of Denmark. They were at firſt governed by an admiral, who was ſent thither every year to make the neceſſary regulations; but that mode has been changed many years, and a governor * appointed, who conſtantly reſides in the country. This poſt is, at preſent, occupied by Mr. Larr Thodal, who has formerly been Daniſh plenipotentiary in the commiſſion for ſettling the limits between Sweden and Norway, and has ſpent ſeveral years at Stockholm.

The Icelanders are of a good honeſt diſpoſition; but they are, at the ſame time, ſo ſerious and ſullen, that I hardly remember to have ſeen any one of them laugh: they are by no means ſo ſtrong as might be ſuppoſed, and much leſs handſome. Their chief amuſement, in their leiſure hours, is to recount to one another the hiſtory of former times; ſo that to this day you do not meet with an Icelander who is not well acquainted with the hiſtory of his own country: they alſo play at cards.

Their houſes are built of lava, thatched with turf, and ſo ſmall, that you find hardly room to turn yourſelf in them. They have no floors; and their windows, inſtead of glaſs, are compoſed of thin membranes of certain animals. They make no uſe of chimnies, as they never light a fire, except to dreſs their victuals, when they only lay the turf on the ground. You will not therefore think it ſtrange, when I inform you, that we ſaw no houſes, except ſhops and warehouſes; and on our journey to Heckla we were obliged to take up our lodgings in the churches.

Their food principally conſiſts of dried fiſh, ſour butter, which they conſider as a great dainty, milk mixed with water and whey, and a little meat. They receive ſo

* Stiftſamtmann.

little bread from the Daniſh company, that there is hardly any peaſant who eats it above three or four months in the year. They likewiſe boil groats, of a kind of moſs (Lichen Iſlandicus) which has an agreeable taſte. The principal occupation of the men is fiſhing, which they follow both winter and ſummer. The women take care of the cattle, knit ſtockings, &c. They likewiſe dreſs, gut, and dry the fiſhes brought home by the men, and otherwiſe aſſiſt in preparing this ſtaple commodity of the country.

Beſides this, the company who yearly ſend fifteen or twenty ſhips hither, and who poſſeſs a monopoly which is very burthenſome to the country, export from hence ſome meat, edder-down, and ſome falcons, which are ſold in the country for ſeven, ten, and fifteen rix-dollars a-piece. Money is very rare, which is the reaſon that all the trade is carried on by fiſhes and ells of coarſe unſhorn cloth, called here Wadmal; one ell of wadmal is worth two fiſhes; and forty-eight fiſhes are worth a rix-dollar in ſpecie. With gold they were better acquainted at our departure, than on our arrival.

They are well provided with cattle, which are generally without horns: they have likewiſe ſheep, and very good horſes; both the laſt are the whole winter in the fields: dogs and cats they have in abundance. Of wild and undomeſticated animals they have only rats and foxes, and ſome bears *, which come every year from Greenland with the floating ice: theſe, however, are killed as ſoon as they appear, partly on account of the reward of ten dollars, which the king pays for every bear, and partly to prevent them from deſtroying their cattle. The preſent governor has introduced reindeer into the iſland; but out of thirteen, ten died on their paſſage, the other three are alive with their young.

It is extraordinary that no wood grows ſucceſsfully in Iceland; nay, there is ſcarcely a ſingle tree to be found on the whole iſland, though there are certain proofs of wood having formerly grown there in great abundance. Corn cannot be cultivated here to any advantage; though I have met with cabbages, parſley, turnips, peaſe, &c. &c. in five or ſix gardens, which were the only ones in the whole iſland.

I muſt now beg leave to add a few words about the Icelandic literature. Four or five centuries ago the Icelanders were celebrated on account of their poetry and knowledge in hiſtory. I could name many of their poets, who celebrated in ſongs the warlike deeds of the northern kings; and the famous Snorre Sturleſon is the man to whom even the Swedes are indebted for the firſt illuſtration of their hiſtory. We, for this reaſon, ſet ſo high a value upon the antient Icelandic records and writings, that they have almoſt all been drawn out of the country: ſo exceedingly ſcarce they are become, that, notwithſtanding the pains I took during the whole time of my ſtay there, I got a ſight of only four or five Icelandic manuſcripts. In the inland parts of the country, our old language has been preſerved almoſt quite pure; but on the coaſts, where the natives have an intercourſe with the Daniſh merchants, it has been ſomewhat altered. Some ſpeak the Daniſh language very well; but thoſe who did not, could ſooner make themſelves intelligible to us Swedes, than to the Danes. We likewiſe found three or four Runic inſcriptions, but they were all modern, and conſequently of no value. I have ſaid before that the Icelanders took pleaſure in liſtening to their old traditional ſayings and ſtories; and this is almoſt the only thing that remains among them of the ſpirit of their anceſtors; for they have at preſent but few poets; and their clergy know little beſides ſome Latin, which they pick up in the ſchools eſtabliſhed in the epiſcopal ſees at Skallholt and Hoolum. Some of them, however, have ſtudied

* The bears here mentioned are the white polar or arctic carnivorous bears, abſolutely forming a ſpecies widely diſtinct from our brown and black bears; though the celebrated Linnæus only ſuſpected them to be a new ſpecies, not having ſeen and examined any of theſe animals.

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at the univerſity of Copenhagen; and I became acquainted with three men of great learning among them, who were particularly well verſed in the northern antiquities. One of them is the biſhop of Skallholt, Finnur Jonſon, who is compiling an eccleſiaſtical hiſtory of Iceland; the two others are the provoſt Gunnar Paulſon, and Halfdan Ginarſon, rector at Hoolum.

That there is a printing-office in Iceland cannot be unknown, as we are acquainted with the rare editions of Olof Tryggwaſſons, Landnama, Greenland, and Chriſtendoms Sagas, or Traditions, printed at Skallholt; but I did not expect to find the art of printing ſo antient here, as it was repreſented to be. A Swede, whoſe name was John Mathieſon, brought hither the firſt printing-preſs, between the years 1520 and 1530; and publiſhed in the year 1531 the Breviarium Nidaroſienſe. I have collected as many Icelandic books as I have been able to diſcover; among the rareſt is the Icelandic bible, printed in folio at Hoolum in the year 1584. I hope likewiſe, that fifteen (till now unknown) traditional hiſtories or ſagas will be no unwelcome acquiſition.

You may judge, Sir, how agreeably I ſpent my time here in theſe occupations, which I applied to with ſo much the more pleaſure, as they all related to objects entirely new: added to which, I was in ſociety with Mr. Banks and Dr. Solander; the latter of whom is a moſt worthy diſciple of our Linnæus, and unites a lively temper to the moſt excellent heart; and the former is a young gentleman of an unbounded thirſt after knowledge, reſolute and indefatigable in all his purſuits, frank, fond of ſocial converſation, and at the ſame time a friend of the fine arts and literature: in ſuch company you will confeſs it was impoſſible I ſhould have the leaſt reaſon for regretting the time ſpent in this voyage.

I had almoſt flattered myſelf with the hopes of ſeeing Mr. Banks and Dr. Solander in Sweden; but I learn that they will be detained in England for ſome time. I much fear Dr. Solander will be for ever loſt to his native country, as well on account of the univerſal eſteem in which he is held in England, as of his being preferred to a more beneficial place at the Britiſh Muſeum than that which he formerly poſſeſſed.

Their voyage to the South Seas will probably make its appearance in April or May next. They have already begun to engrave the collections of animals and plants they have made on their voyage, which will employ them ſeveral years, as they muſt conſiſt, I ſhould apprehend, of near two thouſand plates.

It would be writing a natural hiſtory were I to attempt to give a proper deſcription of theſe admirable collections. They have alone above three thouſand fiſhes and other animals preſerved in ſpirits, moſt of which are new: Linnæus might find among their plants, of which they have ſeveral ſets, (one of which, I flatter myſelf, will find its way into Sweden,) ſubjects for a new mantiſſa.

I propoſe, when I have ſeen Holland, to make a little excurſion to Germany to ſee Mr. Michaelis, and ſoon afterwards return to my native country, where I ſhall have the honour of aſſuring you perſonally of the affectionate regard, &c. &c.

LETTER III.—TO CHEVALIER IHRE.

On the phyſical Conſtitution of the Country.

SIR, Stockholm, June 20, 1773.

THERE is no duty more agreeable to me, than that of obeying your commands, in tranſmitting to you ſome account of Iceland, its antiquities, and what elſe relates to it. As I have happily had an occaſion of ſeeing the country myſelf, it may with juſtice,

juſtice be required of me, that I ſhould willingly communicate to others the informations I have been able to procure; and it would give me peculiar pleaſure if they enabled me ſatisfactorily to anſwer thoſe queſtions which you kindly propoſed to me.

Iceland is juſtly reckoned amongſt the largeſt iſlands in the known world. It is ſixty miles in length, and its breadth exceeds forty Swediſh miles *.

The moſt uſeful among many maps of this country is that which has been made by Meſſrs. Erickſſen and Schoonning in the year 1771, though it might be further improved.

Beſſeſtedr, in the ſouthern part of the iſland, not far from Hafnefiord, lies, according to Horrebow's account of Iceland, in 64 degrees 6 minutes of north latitude, and in 41 degrees of longitude, from the meridian of Stockholm; ſo that it is almoſt in the latitude of Hernóſand †.

The country does not afford a pleaſing proſpect to the eye of the traveller, though it preſents him with objects worthy of attention in many reſpects: for beſides innumerable ridges of mountains that croſs it in ſeveral directions, and ſome of which, on account of their height, are covered with continual ice and ſnow, you only ſee barren fields between them, entirely deſtitute of wood, and covered with lava for the ſpace of many miles. This is certainly as incapable of giving the eye pleaſure, as it is unfit for any other uſe. On the other ſide, however, it cauſes the greateſt ſurprize in the attentive ſpectator, to ſee ſo many ſpeaking proofs of the dreadful effects of volcanoes.

Though the coaſts are better inhabited, the inland parts of the country do not lie waſte and neglected; and one finds every where, ſometimes cloſe together, and ſometimes at greater diſtances, farms with ſome land belonging to them, which generally conſiſts of meadow-land, and ſometimes of hills thick ſpread with low ſhrubs and buſhes, and which they honour with the appellation of Woods.

In the whole iſland there are no towns, nor even villages; nothing but ſingle farms are to be ſeen, ſome of which, however conſiſt of ſeveral dwelling-houſes, deſtined for the owner of the farm and his tenants, (*hiá leygumann*) who procure from the proprietor a houſe and paſture for as many cows, horſes, and ſheep as they chooſe to agree for. On the eſtates of ſome peaſants who are better circumſtanced, there are even ſometimes dwellings for labourers (*huuſman*) who work for daily hire. All theſe farms belong either to the king, the church, or the peaſants themſelves ‡. I will mark the price of two of theſe farms, which were ſold a little before our arrival, that you may judge of their value. The one farm, whereon ten cows, ten horſes, and four hundred ſheep might be kept, was ſold for one hundred and twenty rix-dollars; and the other, which had ſufficient paſture for twelve cows, eighteen heads of young cattle, above a year old, that had not yet calved (*ungnot*), eight oxen, fourteen horſes, and three hundred ſheep, for one hundred and ſixty dollars.

In ſome few places they have ſmall fenced ſpots near their houſes, in which they cultivate cabbage, parſley, ſpinach, turnips, patientia, potatoes, and ſome other roots and vegetables, together with flax and hemp. Fruit trees are looked for in vain, which is not to be wondered at, ſince ſtorms and hurricanes are here very frequent. Theſe have given riſe to the name of (*Wedrakiſta*) Storm-coaſt, which has been given to ſome places in Iceland.

* About 360 Britiſh ſea miles in length, and about 240 in breadth. † A town in Sweden.

‡ In order to ſhew at once in what proportion the farms are diſtr buted between the king, the church, and the farmers, I will here annex an abſtract taken from the Icelandic Villarium, or Land-book of the year 1695, which came into my poſſeſſion.

ABSTRACT FROM THE ICELANDIC LAND-BOOK OF 1695.

Of theſe farms in each ſyſſel belong.	Jullbringe.	Kioſar.	Borgarfiords.	Sneſhaldſnas.	Hnappadals.	Dale.	Baradſtrands.	Iſefiords.	Strande.	Hunavatns.	Skagafiords.	Vadle.	Thingey.	Mule.	Skaftefialds.	Rangervalla.	Arne.	Names of the ſyſſels or diſtricts.	Number of farms.
To the king.	90	40	10	22	25	2	6	21	21	85	40	82	51	45	102	6	4		718
To the biſhop's ſee of Skalholt.	6	2	37				4		3				1	4	13	32	202		30
To the biſhop's ſee of Hoolum.										39	196	61	49						34
Church glebe.	14	9	67	44	18	24	38	64	29	46	14	33	55	81	8	61	2		640
Glebe of clergy.	3	2	9	4	2	3	4	10	3	14	10	13	14	23	6	6	14		140
Glebe of ſuper-annuated clergy.	1	2	4	2		2	3	1	3		1			12	4	7	3		45
For maintaining the poor.	1		1	1				2		1	1		2	5	2				16
For maintaining hoſpitals.				1								1			1		1		184
To farmers.	11	36	216	59	23	149	132	161	66	145	104	133	134	187	47	153	91		47
Total ſum.	126	91	344	199	68	180	187	259	125	329	366	323	306	357	183	268	347		4058

They have likewiſe prevented the growth of fir-trees, and Norway pitch-firs*, which governor Thodal had planted here, whoſe tops ſeemed to wither as ſoon as they were about two feet high, when they then ceaſed growing.

That wood has formerly grown in Iceland, can be proved from the Sagas or tradition ſtories of Landnama, Kialneſinga, Svafdala, and Egill Skallagrimſonare. It is likewiſe proved by pieces which are frequently dug up in marſhes and fens, where not a ſingle buſh is to be ſeen at preſent. The ſubſtance, called by the natives *ſuturbrand*, is likewiſe a clear proof of it.

This ſuturbrand is evidently wood, not quite petrified, but indurated, which drops aſunder as ſoon as it comes into the air, but keeps well in water, and never rots: it gives a bright though weak flame, and a great deal of heat, and yields a ſouriſh though not unwholeſome ſmell. The ſmiths prefer it to ſea-coal, becauſe it does not ſo ſoon waſte the iron. The Icelanders make a powder of it, which they make uſe of to preſerve their cloaths from moths; they likewiſe apply it externally againſt the cholick. I have ſeen tea-cups, plates, &c. in Copenhagen made of ſuturbrand, which takes a fine poliſh. It is found in many parts of Iceland, generally in the mountains in horizontal beds; ſometimes more than one is to be met with, as in the mountain of Lack in Bardeſtrand, where four ſtrata of ſuturbrand are found alternately with different kinds of ſtone.

I have brought a large piece of it with me to Sweden, in which there are evident marks of branches, the circles of the annual growth of the wood, leaves, and bark, in the ſurrounding clay; and there is ſome reaſon to believe, that theſe trees have been mixed in the thrown-up lava in ſome eruption of fire, or an earthquake.

* Pinus picea, Linn. and pinus abies, Linn.

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I am almoſt inclined to believe that ſome ſtreams of lava, which at the depth of fifteen feet, according to obſervations that have been made, can advance twelve thouſand Swediſh ells, of two feet each, in eight hours, by a declivity of forty-five degrees, have ſwept away theſe trees, which ſeem to have been of a conſiderable ſize, and buried them; and this is ſo much the more probable, as the ſuturbrand frequently has the appearance of coal. But as I do not know whether this opinion has ever been advanced before, and having had no opportunity of making ſufficient obſervations upon this conjecture, and as there is even ſome reaſon to ſuppoſe, that a tree would in ſo violent a fire directly be conſumed to aſhes, though the contrary may alſo be poſſible, when it is in the ſame inſtant overturned, covered, and in a moment ſmothered; yet I will not even venture to offer this opinion as a probable conception.

There is ſtill another probable ſuppoſition. The trees may have been overturned by an earthquake, and then covered beneath the hot aſhes of a volcano, in the ſame manner as happened at Herculaneum, and other places, where whole towns have ſhared the ſame fate.

That there have been formerly conſiderable woods in Iceland can ſcarcely be doubted; nay, there are at this time ſome ſmall ſpots covered with trees, as at Hallarmſtad, Hunſefeld, and Aa, and in ſeveral other places. However, there are no fir nor pine-trees; and the birch-trees now exiſting never exceed the height of eight or twelve feet, and are not above three or four inches thick, which is partly owing to bad management, partly to the devaſtations cauſed by fire or hurricanes, and the Greenland floating ice: the laſt is the cauſe that at Stadar-hrauns, Eyry, and Kiolfield, whole ſpots of land are ſeen covered with withered birch-trees. But theſe being found inſufficient to ſupply the inhabitants with fuel, they likewiſe make uſe of turf, fern, juniper, and black crow-berry buſhes *(empetrum nigrum)*; in other places they burn the bones of cattle killed for butchers meat, and fiſhes moiſtened with train-oil; alſo dried cow-dung that has been the whole winter in the meadow; and laſt of all floating wood. This floating wood is obtained in great abundance every year, particularly at Langanas on the north-eaſt coaſt, at Hornſtrand on the north-weſt ſide, and every where on the northern coaſt of the country *. There are ſeveral different kinds of wood among it, the greateſt part is Norway pitch-fir †; but beſides this, one finds common fir, linder, willow ‡, cork-

* The immenſe quantity of wood floating down the Miſſiſſippi, the St. Lawrence, and other rivers of North America, are probably thoſe which are carried to the northern regions. From the gulph of Mexico a ſtrong current ſets acroſs the Atlantic in a ſouth-weſt to north-eaſt direction, or nearly, and carries many tropical fruits on the coaſt of Norway, the Ferois, and Iceland; which remarkable circumſtance has been noticed by that curious obſerver and delineator of nature George Edwards. But the wood coming down the Miſſiſſippi is remarked by Boſſu, in his Travels through North America, vol. I. p. 19. The coaſt of Greenland is benefited by drift-wood, in the ſame manner as Iceland. See Crantz's Hiſt. of Greenland, vol. I. p. 37. The northern coaſt of Siberia is often covered with wood in a moſt aſtoniſhing manner. See John George Emelin's Travels through Siberia, vol. II. p. 415. Nor is the coaſt of Kamtſchatka deſtitute of floating wood. See J. F. Miller's Collection of Ruſſian Tranſactions, vol. III. p. 67. The great rivers of Siberia, ſuch as the Lena, Kolyma, Yeniſea, and others, carry chiefly in ſpring many wood trees along with their waters into the ocean, where it is often floating in various directions, ſet by winds and currents, and checked by the immenſe maſſes of ice, till, after many months and years, it is thrown up and left on the coaſt, for the benefit of the inhabitants of theſe frigid regions, which are too cold for the growth of trees. Iceland receives its drift-wood by ſtrong weſterly and north-weſterly gales, varying with ſoutherly winds, which ſeems to confirm the opinion, that the drift-wood comes from North America; it conſiſts chiefly of pinus, abies, picea, limbra, and larix, tilia, europea, betula alba, and ſalix caprea, and ſome unknown kinds of wood: and according to Cateſby's Nat. Hiſt. of Carolina, great quantities of theſe enumerated woods are floating down the rivers of Virginia and Carolina; and another part ſeems to come round the north of Europe from the Siberian rivers.

† Pinus abies, Linn. ‡ Salix caprea, Linn.

wood, and two ſorts of red-wood, which are called *rauda grene* and *ſtaffalejk* in Iceland, and on account of their colour and hardneſs are employed in various kinds of neat work. It comes moſt probably from the northern parts of Tartary, and partly from Virginia and Carolina. As to what relates to agriculture, it may be diſcovered by many paſſages of the ancient Icelandic accounts, that corn formerly grew in Iceland. In later times ſeveral trials have been made with it, but they have been attended with little ſucceſs.

Governor Thodal ſowed a little barley in 1772, which grew very briſkly; but a ſhort time before it was to be reaped, a violent ſtorm ſo utterly deſtroyed it, that only a few grains were found ſcattered about.

If we conſider, beſides theſe ſtrong winds, or rather hurricanes, the froſts which frequently ſet in during May and June, we ſhall diſcover a number of difficulties which check the riſe and growth of agriculture in Iceland. If, notwithſtanding theſe obſtacles, it can ever be brought to a thriving condition, it muſt certainly be under the preſent indefatigable governor, who has the welfare of the country much at heart, and, in conjunction with the government, ſtudies every poſſible means to promote it.

I conſider theſe violent winds, and the Greenland floating ice, which every year does great damage to the country, as the chief cauſe of the diminution of the growth of wood, as well as of the ill ſucceſs in the late attempts for introducing agriculture.

This ice comes on by degrees, always with an eaſterly wind, and frequently in ſuch quantities, as to fill up all the gulphs on the north-weſt ſide of the iſland, and even covers the ſea as far as the eye can reach; it alſo ſometimes drives to other ſhores. It generally comes in January, and goes away in March. Sometimes it only reaches the land in April, and, remaining there a long time, does an incredible deal of miſchief. It conſiſts partly of mountains of ice (*fiall-jakar*) which are ſometimes ſixty fathoms high above water, and announce their arrival by a great noiſe, and partly of field ice (*hellu-is*) of the depth of one or even two fathoms. Of this laſt ſome parts ſoon melt, and other parts remain undiſſolved many months, often producing very dangerous effects to the country *.

The ice cauſed ſo violent a cold in 1753 and 1754, that horſes and ſheep dropped down dead on account of it, as well as for want of food; horſes were obſerved to feed upon dead cattle, and the ſheep eat of each other's wool. In the year 1755, towards the end of the month of May, in one night the ice was one inch and five lines thick. In the year 1756, on the twenty-ſixth of June, ſnow fell to the depth of a yard, and continued falling through the whole months of July and Auguſt. In the year following it froze very hard towards the end of May and the beginning of June in the ſouth part of the iſland, which occaſioned a great ſcarcity of graſs, inſomuch that the inhabitants had

* The immenſe maſſes of ice, which are ſo dreadful, affecting the climate of the country along the northern and north-weſt coaſt of Iceland, arrive commonly with a N. W. or N. N. W. wind from Greenland. Field-ice is of two or three fathoms thickneſs, and is ſeparated by the winds, and leſs dreaded than the rock or mountain-ice, which is often ſeen fifty and more feet above water, and is at leaſt nine times the ſame height below water. Theſe immenſe maſſes of ice are frequently left in ſhoal water, fixed, as it were, to the ground, and in that ſtate remain many months, nay years, undiſſolved, chilling all the ambient part of the atmoſphere for many miles round. When many ſuch lofty and bulky ice-maſſes are floating together, the wood which is often drifting along between them, is ſo much chafed, and preſſed with ſuch violence together, that it takes fire; which circumſtance has occaſioned fabulous accounts of the ice being in flames: of the bulk of ſuch ice-maſſes, ſee Forſter's Obſervations made during a voyage round the world, page 63, 1773 and 1774.

little or no fodder the enſuing winter for their cattle: theſe froſts are generally followed by a famine, many examples of which are to be found in the Icelandic chronicles *.

Beſides theſe calamities, a number of bears yearly arrive with the ice, which commit great ravages, particularly among the ſheep. The Icelanders attempt to deſtroy theſe intruders as ſoon as they get ſight of them; and ſometimes they aſſemble together, and drive them back to the ice, with which they often float off again. For want of fire-arms they are obliged to make uſe of ſpears on theſe occaſions. The government itſelf takes every poſſible method to encourage the natives to deſtroy theſe animals, by paying a premium of ten dollars for every bear that is killed, and by purchaſing the ſkin of him who killed it. Theſe ſkins are a prerogative of the king, and are not allowed to be ſold to any other perſon.

It is as abſurd to ſuppoſe that this floating ice conſiſts principally of ſalt-petre, as that it might be employed in making gun-powder; and yet there are ſome perſons who pretend to ſupport this opinion, but they are certainly undeſerving the trouble of refutation.

I muſt mention two other inconveniences to which Iceland is ſubject, the *Skrida* and *Snioflodi*: the name of the firſt imports large pieces of a mountain tumbling down, and deſtroying the lands and houſes which lie at the foot of it. This happened in 1554, when the whole farm of Skideſtedr in Vatndal was ruined, and thirteen people buried alive. The other word ſignifies the effects of a prodigious quantity of ſnow, which covers the tops of the mountains, rolling down in immenſe maſſes, and doing a great deal of damage. There was an inſtance of this in the year 1699, during the night, when two farms, in the fyſſel of Kioſar, were buried in the ſnow, with all their inhabitants and cattle †.

The climate is not unwholeſome, as the uſual heat is not extreme, nor the cold in general very rigorous. However, there are examples of the mercury in Fahrenheit's thermometer falling quite down into the bulb, which is twenty-four degrees under the freezing point; when at other times it has roſe to one hundred and four degrees.

It cannot be determined with any degree of certainty how much the cold has increaſed or decreaſed prior to 1749, the year when Horrebow began his obſervations on the weather; which were afterwards continued by the provoſt Gudlaug Thorgeirſſon to the year 1769: ſince which period obſervations have been made by Mr. Eyolfs Jonſon, who was formerly aſſiſtant at the Round Tower at Copenhagen, and receives a ſalary as firſt obſerver in Iceland ‡. His obſervatory is at Arnarhol, near Reykarwick; and,

* The cold ſeems to have become more intenſe in Iceland ſince the time when theſe here-before-mentioned fir-trees were growing, and before the ocean was ſo very much covered with floating ice.

Theſe facts ſeem to confirm very much the opinion of Count Buffon in his Epoques de la Nature; in conſequence of which he believes that the country towards the poles was formerly more habitable than it is at preſent: he is of opinion, that the ſkeletons of elephants found far north in Siberia, are almoſt irrefragable proofs of the formerly milder temperature of the air; ſince they could ſcarcely be found in Siberia in ſuch numbers unleſs they had exiſted there. Buffon Epoques de la Nature, p. 165, & ſeq. The eaſtern ſhores of Greenland were formerly inhabited by a colony of Norwegians, and they had there a biſhop's ſee, called Gardar, to which belonged farms, woods, paſtures for cattle, granges, and tillage-land. See Crantz's Hiſtory of Greenland, vol. I. p. 245, which evidently proves the mildneſs of theſe now inhoſpitable regions. Ships failed formerly to the eaſtern coaſt; whereas for a great number of years paſt it has been inacceſſible, on account of the immenſe maſſes of ice found there. Are Frode in Scheda de Iclandia, Oxon. 1716, cap. 2. p. 10, ſays, that at the firſt landing of the Norwegian coloniſts, Iceland was covered with woods and foreſts in the ſpace between the ſhores and mountains.

† Snioflod, or Snowflood, is a very expreſſive word for this dreadful accident, which is not uncommon in all alpine countries, eſpecially Switzerland. The Italians call ſuch a rolling down of maſſes of ſnow, Lavine; the French, Laivaches; and the Germans, Lauihnen.

‡ This ingenious gentleman died in 1775, not many months ſince the writing of this letter.

what

what is remarkable, he makes uſe of a teleſcope of his own conſtruction, made of the black Iceland agate, inſtead of coloured glaſs.

Lightning and thunder ſtorms are rare, and both in ſummer and winter ſeldom happen any where elſe but in the neighbourhood of volcanoes. Northern lights frequently appear uncommonly ſtrong *. Sometimes a kind of the ignis fatuus is obſerved (*Snoelios* and *hrævas-eldur*) which attaches itſelf to men and beaſts.

Amongſt other aerial phænomena, the lunar halo (*roſabaugu*) which prognoſticates bad weather, likewiſe deſerves a place here, as well as parhelions (*hiaſolar*), which appear ſometimes from one to nine in number †. Fire-balls (called *Viga Knottur*) are likewiſe obſerved, and when they are oval are named *Wiigabrandur*; and laſt of all comets, or *Haleſtiernor*, which are often mentioned in their chronicles.

The ebb and flood here, which the Icelanders call *flod* and *fiara*, are perfectly the ſame as at other places: they are ſtronger during the new and full moon than at other times, and ſtrongeſt of all about the equinoxes.

As I am here ſpeaking of the nature of the country, I cannot paſs over in ſilence the earthquakes which often happen, particularly before volcanic eruptions. In September, in the year 1755, fifteen violent ſhocks were obſerved within a few days; and it is not uncommon to ſee whole farms overturned by them, and large mountains burſt aſunder, as will be remarked hereafter, in the letter which treats of the conflagrations in Iceland.

In ſo mountainous a country, where there is no agriculture, and no commerce, except that carried on by bartering of the various commodities on the arrival of the Daniſh ſhips, no good roads can be expected: they therefore make uſe of neither carts nor ſledges; and there are many places in which it is both difficult and dangerous even to ride on horſeback, which have cauſed the names of *Ofoerur*, *Halſavegur*, *Hofdabrecka*, *Illaxlif*, to be given to ſome roads. Their length is not reckoned by the number of miles, but that of *thingmanna-leid*, that is, as far as a man, who is travelling to a place where juſtice is adminiſtered, can go in one day, which is about three and a half Swediſh, or four Icelandic miles ‡. Formerly houſes were built in ſome particular places for the uſe of travellers, which were called *Thiodbrautar-ſkaala*; but now the churches are every where made uſe of for this purpoſe.

When the Icelanders travel to ſea-ports to exchange their fiſh, &c. they have twenty, thirty, and ſometimes a greater number of horſes with them, which carry a load of three hundred or four hundred pounds weight each; but they have always ſome ſpare horſes along with them to relieve thoſe that are fatigued: this cavalcade is called *Leſt*; and the man who guides them is called *Leſtamadur*: he rides on before, accompanied with a dog, that, by uttering a certain word, drives the ſtrayed or ſtraggling horſes into the right road. They never carry any food for their horſes, as paſture is plenty every where.

* The northern lights appear in Iceland in all the different quarters of the compaſs, eſpecially on the ſoutherly horizon, where a dark ſegment appears, from whence ſtrong columns of light dart forth. They are moſt frequently ſeen in dry weather, though there are inſtances of their appearance before, during, and after a ſhower of rain. The lights are often ſeen tinged with yellow, green, and purple. See Oggert Olafſen's and Biarne Paulſen's Travels through Iceland, ſec. 855.

† The parhelions are obſerved in Iceland chiefly at the approach of the Greenland ice, when an intenſe degree of cold is produced, anh the frozen vapours fill the air: there are many inſtances proving, that under ſuch circumſtances, the ſun never appears without ſhewing one or ſeveral parhelions, and often a rainbow on the oppoſite ſide.

‡ About twenty-one or twenty Engliſh miles.

The number of the inhabitants is by no means adequate to the extent of the country. It has been much larger in former times; but beſides what is called the *Digerdeath*, and other contagious diſeaſes, among which the plague carried off great numbers from 1402 to 1404, many places have been entirely depopulated by famine. In the years 1707 and 1708, the ſmall-pox deſtroyed ſixteen thouſand perſons; ſo that the number of inhabitants cannot exceed ſixty thouſand.

LETTER IV.—TO CHEVALIER IHRE.

Of the Arrival of the Norwegians, the Government, and Laws in Iceland.

Stockholm, June 13, 1774.

As I have treated in my former letter of the nature of the country in Iceland, an enquiry how, and when it was firſt peopled, might not perhaps be diſagreeable to you.

We know little or nothing of the firſt inhabitants of Iceland, who poſſeſſed the country when the Norwegians firſt arrived there. We are informed by ſome, that they were Chriſtians, who, according to the moſt probable conjectures, arrived there from England and Ireland, and were called *Papa* by the Norwegians *. They pretend to affirm with the greateſt certainty, that this Engliſh colony ſettled there in the beginning of the fifth century; but I look upon it as the ſafeſt way not to enter a all upon an affair wrapped up in ſuch obſcurity. There is notwithſtanding reaſon to ſuppoſe that the Engliſh and Iriſh were acquainted with this country under another name long before the arrival of the Norwegians; for the celebrated Beda in his time pretty accurately deſcribes it. But I will not dwell upon theſe ancient inhabitants of Iceland, but proceed to examine how the Norwegians came to ſettle there. Of this we have ſeveral accounts in the Icelandic Sagas †. I ſhall now particularly follow Landnama Bok, which treats of the arrival of theſe new coloniſts.

Naddoddr, a famous pirate, was driven by the winds on the coaſt of Iceland, on his return from Norway to the Ferro Gales, in 861, and named the country *Snio-land* (Snow-land) on account of the great quantity of ſnow with which he ſaw the mountains covered. He did not remain there long; but however extolled the country ſo much after his return, that one Gardar Suafarſon, an enterpriſing Swede, was encou-

* The ancient Norwegians, who firſt landed in Iceland, found there inhabitants who were Chriſtians, and were called by the Norwegians *Papas*, which is conjectured to ſignify prieſts. This is confirmed by the preface of the Landnama Bok, or Book of Colonization, written by various authors, the firſt of whom was Are Frode, born 1068; and he expreſsly ſays, in the firſt chapter of the book, that Iceland was ſettled by the Norwegians in the time of Alfred king of England, and of Edward his ſon. The ſame preface mentions, that Beda ſpeaks of Iceland, under the name of Thyle, more than a hundred years before the arrival of the Norwegians in Iceland; and that the Norwegians found there Iriſh books, bells, and croſiers, which proved that theſe people came from the weſt. And it is added, that the Engliſh books mention an intercourſe of navigation between thoſe lands about thoſe times. King Alfred certainly mentions in his tranſlation of Oroſius, the utmoſt land to the N. W. of Iceland, called Thila; and that it is known to few on account of its great diſtance. See Alfred's Oroſius, p. 31. The Landnama Bok was publiſhed at Copenhagen, 1774, in 4to. The circumſtance of the Iriſh books left in Iceland is likewiſe mentioned by the ſame Are Frode, in Ara Multiſcii Shedis de Iſlandia, Oxoniæ, 1716, 8vo. cap. ii. pag. 10. who ſays, they choſe not to live with the heathens, and for that reaſon went away, leaving behind Iriſh books, bells, and croſiers.

† The word Saga ſignifies the ancient hiſtorical monuments in Iceland; ſome of them are the hiſtorical relations, others are fabulous ſtories in the ſtyle of the Arabian Nights. The diſtinction between them requires a nice critical judgment. As the word occurs often, we once for all explain it here.

raged

raged by his account to go in ſearch of it in 864. He ſailed quite round the iſland, and then called it *Gardarſholmur* (Gardar's Iſland). He remained the whole winter in Iceland, and in ſpring returned to Norway, where he deſcribed the new-diſcovered iſland as a pleaſant, well-wooded country. This excited a deſire in Floke, another Swede, and the greateſt navigator of his time, to undertake a voyage thither. As the compaſs (in Icelandic *Leitharſtein* *) was not then known, he took three ravens on board, to employ them on the diſcovery. By the way he viſited his friends at Ferro; and, after having ſailed farther to the northward, he let fly one of his ravens, which returned to Ferro. Sometime after he diſmiſſed the ſecond, which returned to the ſhip again, as he could find no land. The laſt trial proved more ſucceſsful, ſince the third raven took his flight to Iceland; ſoon after they diſcovered land, and in a few days really arrived there. Floke ſtayed here the whole winter with his company: and becauſe he found a great deal of floating ice on the north ſide, he gave the name of Iceland to the country, which it has ever ſince retained.

When they returned to Norway in the following ſpring, Floke and thoſe that had been with him, made a very different deſcription of the country. If, on the one ſide, Floke deſcribed it as a wretched place, Thorulfr (one of his companions in the voyage) on the other ſide, ſo highly praiſed it, that he affirmed butter dropped from every plant, which gained him the nick-name of Thorulfr Smior, or Butter Thorulfr †.

After what I have related, there are no traces of any voyage to Iceland, till Ingolfr and his friend Leifr undertook one in 874. They found on their arrival that the country had not been miſrepreſented; and reſolved, after having ſpent the winter on the iſland, to ſettle there entirely for the future. Ingolfr returned to Norway, to provide whatever might be neceſſary to accompliſh a new and comfortable eſtabliſhment in an unfertilized and dreary country; and Leifr in the meanwhile went to aſſiſt in the war in England. After an interval of four years, they met again in Iceland, the one bringing with him a conſiderable number of people, with the neceſſary tools and implements for making the country habitable; and the other imported his acquired treaſures. Since this period many people went there to ſettle, and in ſixty years time the whole iſland was inhabited; and king Harold, who did not contribute a little towards it by his tyrannical treatment of the petty kings and lords in Normandy, was at laſt obliged to iſſue an order, that no one ſhould ſail from Norway to Iceland, without paying four ounces of fine ſilver to the king, in order to put a ſtop, in ſome meaſure, to thoſe continual emigrations which weakened his kingdom.

Though the greateſt part of the inhabitants came from Norway, there are however many Danes and Swedes among them. Of the latter I will only mention the following, from that edition of Landnama Bok, which was printed at Skallholt. Ingimundur, an earl in the Gothic empire, one of the deſcendants of Bore, Gore's brother, p. 90; with his friends Jorundr, Ejvindr Sorkver, Aſmundr, and Hvatefridleifr; and his ſlaves Fridmundr, Bodvar, Thorer Refskegg, and Ulfkell, p. 90: Thordur, deſcended by the father's ſide in the fifth degree from Ragnor Lodbrock, p. 102: Thordur Knappur,

* The word *Leitharſtein* is certainly equivalent to the Engliſh word loadſtone, and probably has the ſame origin. The Anglo-Saxon word Lædan ſignifies to lead; and the magnet being the leader of the navigator, it is very evident that the loadſtone is the leading ſtone of the ſhip. The hiſtory of the three ravens is moſt evidently copied from the hiſtory of the deluge in Geneſis. However it proves an uncommon ſagacity in the navigator, who made uſe of birds for the firſt diſcovery of land.

† The expreſſion which Thorulfr made uſe of in deſcribing the fertility and richneſs of the country, characterizes the genius and manners of the age he lived in, and is therefore not to be over-looked in this account. Theſe minute ſtrokes paint the character and ſimplicity of the age, and, when compared with our manners, ſet them off in the faireſt point of view.

natural

natural ſon of Biorns of Haga; and Nafar Helge, p. 104: Bruni Hin Hviti, ſon of Hareks, earl of Upland, p. 104: Thormodur Hin Rami, p. 105: Biorn Rolfſſon of the blood royal, p. 105: Helgi Hin Magri, p. 107: Thorir Snepill, a ſon of Joruns, daughter of the Lagman Thorgnys, p. 117: and Gardar Suafarſon. Beſides theſe, Are Frode mentions one of the name of Olafr, who was of the ſame family as king Harold; another of the name of Hrollangur, brother of Rolfs firſt duke of Normandy, who drew his origin from the Swediſh king Gore, grandfather of Gylfe.

Torfæus mentions one Bodvar, a Swede, who ſettled in Iceland, and was a deſcendant of the princeſs Goja, ſiſter of Gore: Floke, who gave to the iſland its preſent name of Iceland, was deſcended from the ſame family. Dalin, in his preface to the firſt volume of his Swediſh hiſtory, likewiſe mentions, out of Peringſkold and Bjorner, the following: Snobjorn, Bjorn Oſtrane, Grim, Orm Wedorm, Bjorn, and Grimkill, with their mother Helga, daughter of Harold, Barder Snefallſas, Barder Wiking, Brimle, Hjelm, Gote, Skolder Svenſke, Glamer, Wafur Helge, and Slâttubjorn.

As often as a new colony arrived there, the principal perſon in the company appropriated to himſelf as large a part of the country as he was able to occupy, and gave up as much of it as he thought fit to his companions, whoſe chief he was, bearing the title of Godi. But in a period when robberies and violence, by ſea and land, were conſidered as valour and merit, peace could not long ſubſiſt between the neighbouring leaders. There are every where inſtances to be met with in the Icelandic Sagas of battles between the new and original ſettlers. To prevent theſe conflicts in future, a perſon was choſen in the year 928, with the title of Laug-ſaugumadur, and great power and dignity conferred upon him. This man was the ſpeaker in all their public deliberations, pronounced ſentence in difficult and intricate caſes, decided all diſputes, and publiſhed new laws after they had been received and approved of by the people at large: but he had no power to make laws without the approbation and conſent of the reſt. He therefore aſſembled the chiefs whenever the circumſtances ſeemed to require it; and after they had deliberated among themſelves, he repreſented the opinion of the majority to the people, whoſe aſſent was neceſſary before it could be conſidered as a law. His authority among the chiefs and leaders was however inconſiderable, as he was choſen by them, and retained his place no longer than whilſt he had the good fortune to preſerve their confidence.

Their firſt form of government was conſequently a mixture of ariſtocrary and democracy: but all the regulations made by it were inſufficient to maintain order among ſo many chiefs, who, though all of the ſame rank, were differently inclined, and unequal in power. Nothing was therefore more frequent than rapine and violation of the laws. They openly made war againſt one another, examples of which are to be met with in the Sturlunga Saga, where, it is ſaid, twenty veſſels, carrying one thouſand three hundred men, had a bloody engagement, which ſo weakened the contending parties, that their whole power at laſt became an eaſy prey to a few arbitrary and enterpriſing men, who, as is too generally the caſe, wantonly abuſed it, to the oppreſſion of their countrymen, and the diſgrace of humanity*.

Notwithſtanding all theſe inteſtine troubles, they remained entirely free from the Norwegian yoke; though the kings of that country, ſince the time of Harold Harfagers, viewed this new and powerful republic with envious eyes, which, though now ſeparated, owed its origin to them; but at laſt they experienced that fate, which is almoſt always

* The account of the origin of the Icelandic republic is a curious and intereſting circumſtance for the hiſtory of humanity; the ſame muſt be ſaid of the inteſtine feuds which gave an opportunity to the Norwegian kings to eſtabliſh their authority over this once free nation.

inevitable,

inevitable, wherever liberty degenerates into licentiouſneſs and public ſpirit into ſelfiſh views; that is, they were obliged to ſubmit to one chief. The greateſt part of the inhabitants in 1261, put themſelves under the protection of king Hakans, and promiſed to pay tribute to him on certain conditions agreed upon between them, and the reſt followed their example in 1264. Afterwards Iceland, together with Norway, became ſubject to the crown of Denmark, which intruſted the care of it to a governor, who commonly went there only once a year to examine every thing, though according to his inſtructions, he ought to have reſided there. As the country ſuffered incredibly through the abſence of its commanders, it was reſolved a few years ago, that the governor ſhould reſide there continually, and have his ſeat at Beſſeſtedr, one of the royal domains, where old Snorre Sturleſon formerly dwelt. He has under him a bailiff, two laymen, a ſheriff, and twenty-one *ſyſſelmen**. Formerly the country was divided into quarters (*Fiordungar*) each having its own court of juſtice, of which one was formed of their public aſſemblies, under the denomination of *Fiordungs-doeme* †. But as the public ſecurity ſeemed to require a ſuperior court of judicature, to which the ſuffering party might appeal; a *Fimtar-doeme* was eſtabliſhed ſoon after the introduction of the Chriſtian religion, which tribunal conſiſted of the four above-mentioned courts, and ſome clergymen.

At preſent all cauſes are firſt decided at the *Hærads-thing*, or county court, from which the parties concerned may appeal to the *Al-thing*, or common court of juſtice, which is kept every year on the eighth of July at Thingvalla. Here there are two courts, the one before which the cauſe in appeal is firſt brought, and conſiſts entirely of *lagmen* ‡; the other to which recourſe may be had for a new hearing the following year, and more accurate examination; and this is compoſed of the governor, who preſides, and twelve aſſeſſors, who are the moſt reſpectable men in the country, moſtly *lagmen* and *ſyſſelmen*. From this court the parties may again appeal to the ſupreme court of judicature at Copenhagen, which is final.

The Norwegians, on their firſt arrival in Iceland, made their own laws; but theſe proving inſufficient, when the number of people increaſed, Ulfliotr undertook, in the year 987, a voyage to Norway, and compoſed an accurate code of laws from the regulations eſtabliſhed there. He made uſe of the *Gulothing* law on this occaſion, and returned to his native country after an abſence of three years.

In 1118, the *Grágas*, a famous ancient code of laws, was received there; and in 1280, that called the *Jonſbok* §, according to which ſentence is ſtill pronounced in ſome

* The place of *Amtman* is here tranſlated Bailiff, and is to be taken in the ſenſe in which the French receive the word *Bailif*, i. e. the head of a Bailiwick. The word *Lagmann* ſignifies properly a Lawman; i. e. a perſon who adminiſters juſtice, and might be tranſlated Judge or Juſtice. The *Landvogt* is the perſon who adminiſters the executive power of juſtice and the criminal law; and he may be compared to a ſheriff. The *Syſſelmen* are the magiſtrates of the ſmaller diſtricts in Iceland (called the *Syſſel*) who not only act as juſtices of the peace, but alſo as receivers of the land-tax. The governor is called in Iceland *Stiftsamtmann*, which is the ſame as a bailiff of the epiſcopal dioceſe; i. e. the chief magiſtrate of the iſland. This place was occupied in 1772 by Mr. Thodal, counſellor of juſtice, who had been employed in the final adjuſtment of the limits between Sweden and Norway; his ſalary amounts to 1500 rix-dollars. Travellers praiſe his abilities, patriotiſm, and hoſpitality. The bailiff at the time of our arrival in Iceland, was Mr. Olafr Stephanſſon, a native of Iceland, whoſe parts and abilities we admired, and whoſe hoſpitality we experienced: his ſalary is 400 rix-dollars; and the ſame appointment is given to the ſheriff (*Landvogt*) Mr. Skule Magnuſen, who is ſaid to deſerve well of his country by his patriotiſm and eminent ſervices.

† The words *Fiordungs-doeme* and *Fimtar-doeme* are ſtill in part preſerved in the language. For *Doomſday* is the day of judgment, from the Gothic word *Doem*, to judge, with which the Engliſh word Doom correſponds.

‡ At the ſame time and at the ſame place the ſpiritual court called *Preſta-ſtefna* is held, wherein the governor and biſhop preſide: the prieſts are the aſſeſſors.

§ The *Jonſbok* was received in 1272, according to an Icelandic Chronicle, publiſhed by Langebeck in the ſecond volume of the Scriptores Hiſt. Dan.

cafes;

caſes; but at preſent moſt matters are decided after the Daniſh law, and ſome more recent regulations.

LETTER V.—TO CHEVALIER IHRE.

Concerning Eccleſiaſtical Affairs in Iceland.

Stockholm, June 22, 1772.

It is known from Landnama Bok, and the Shedæ of Are, that the Norwegians found ſome traces of Chriſtianity on their arrival in Iceland. There were alſo ſome few Chriſtians among theſe new coloniſts, who, however, ſoon apoſtatized to the heathen religion, ſo that it became general there. It is not known whether any attempts had been made to introduce the Chriſtian religion before the year 981, when a certain biſhop Friedric arrived there from Saxony, and was obliged to return, after a ſtay of five years, without having made any great progreſs.

However, a church was built in 984, by Thorvard Bodvarſon, and ſome perſons received baptiſm; but others, though they had no objection to the Chriſtian doctrine, could not be prevailed upon to ſuffer themſelves to be baptized, as they pretended it would be indecent to go naked into the water like little boys to receive baptiſm, which, according to the cuſtom of thoſe times, could only be done by ſubmerſion. Some, however, to ſhew their deteſtation of paganiſm, ſuffered themſelves to be ſigned with the croſs, which they called *Primſigning*. Theſe were not conſidered either as Chriſtians or Heathens; however, they were allowed to eat with the former, and to be buried cloſe to the church-yard.

Olof Tryggvaſſon afterwards ſent them Stefr Thorgilſſon, and after him his chaplain Thangbrand, a German by birth; but they were both received with ſtones and abuſive language, as they attempted to convert them, which happened to be at the very ſpot where the common court of juſtice was held: nor were they ſpared by the poets of the country, who, being bribed for the purpoſe, poured forth in their poetical productions the keeneſt invectives and ſatire upon theſe champions of the Chriſtian religion.

However, the Icelanders obtained ſome knowledge of the Chriſtian doctrine, which by degrees operated upon their minds. Some of them refuſed to contribute any more towards the idolatrous ſacrifices, and wiſhed to enjoy more circumſtantial and certain inſtruction in the Chriſtian religion; ſo that on the arrival of Giſſur and Hyalti in the year one thouſand, the whole country was converted without bloodſhed, though not without oppoſition. They alſo obtained a jus canonicum* from biſhop Grimkell, drawn up by himſelf, which was as valid as a law till 1123, when it was again reviſed by biſhops Thorlak and Ketill †.

After this time monks and convents abounded in the country. Many monks of the order of St. Benedict and St. Auſtin ſettled there, and the people paid a tribute to the Roman ſee, as well as other European nations, which conſiſted in one *nagli*, ten of which were equal to one ell of two feet ‡.

That Rome did not loſe ſight of Iceland, though ever ſo diſtant, can be proved by the biſhop of Skallholt, Arne Therlakſon, keeping his own agent, Sighvatr Lande, canon of Drontheim, at the ſecond council of Lyons, which was convened by Gregory I. in the

* See Kriſtnis Saga, printed Copenhagen, 1776, in 8vo. p. 57.

† The canon law was printed at Copenhagen, 1776, in 8vo.

‡ The value of all things is ſettled in Iceland by ells of *wadmal*, which is a coarſe woollen ſtuff of their own manufacturing: the ſee of Rome taxed every man in Iceland as high as the value of ten ells of *wadmal*.

year 1274; and that the Icelanders did not yield in zeal to their fellow-chriſtians, appears by the willingneſs with which they contributed both men and money to the cruſades, which were then in faſhion.

Amongſt other ſaints, the biſhop of Hoolum, John Ogmundſſon, and the biſhop of Skallholt, Thorlax Thorhallſſon, were worſhipped: the laſt died in 1193, and though he was not canonized by any pope, yet he found worſhippers in Iceland *, Denmark, Norway, England, Scotland, the Orkneys, the Ferro iſlands, and in Greenland, and even had a church dedicated to him in Conſtantinople. His Saga is full of miracles, ſaid to have been wrought by him. It was unanimouſly agreed that the tenth of January, the day on which he died, and the third of July, when he was elected biſhop, ſhould both be annually celebrated. His body was taken out of the grave on the thirteenth of Auguſt 1198, and put into a coffin plated with gold and ſilver; and it was reſolved to keep this day alſo as a feſtival. The proteſtant biſhop Giſſur Ejnarſſon, afterwards, from a miſtaken zeal, cauſed the precious ornaments with which the box was adorned to be broken off, and had it covered with braſs gilt, which is ſtill preſerved in the church of Skallholt, as a piece of antiquity. In the year 1715, biſhop John Widalin ordered the pretended relique to be buried, and only a bit of his ſkull is ſhewn, which, however, if cloſely examined, will be found to be neither more nor leſs than a piece of cocoa-ſhell. Arcimboldus, ſo famous in the north for his ſale of indulgences, was much too attentive to his intereſt to have neglected Iceland. In 1517 he had his own agent there, who was, however, more coldly received by biſhop Stephen Jonſſon than he expected.

The Icelanders firſt received their own biſhops in the year 1057 at Skallholt, and at Hoolum in 1107. They were originally under the juriſdiction of the archbiſhop of Bremen and Hamborough; but in the year 1103 or 4, they became ſubordinate to Azerus †, firſt archbiſhop of Lund in Scania, and in 1152 to the biſhop of Drontheim. The Icelanders preſerve the memory of their prelates both in their annual regiſters, and in their ſagas, which particularly deſerve attention, ſince the actions of many worthy men are found recorded therein. I ſhall mention the deplorable end of one of their biſhops, John Jerechini ‡, by birth a Dane, who was provoſt and electus of Weſteras, and was appointed archbiſhop of Upſala, by King Ericus Pomeranus. In this exalted ſituation he behaved ſo ill, that he was obliged to fly to Denmark in 1419; from whence, according to the account of the Icelandic regiſters, he made the beſt of his way to England, and from thence took his paſſage for Iceland, where he did not arrive till the year 1430. He was received by the inhabitants with open arms, and appointed to the ſee of Skallholt, which had been vacant eleven years. Here he diſcovered ſo much pride and ſelfiſhneſs, that ſome of the principal perſons in the country entered into a conſpiracy, and when he was celebrating maſs in the cathedral church, on the thirteenth of Auguſt 1433, in commemoration of St. Thorlak, they took him by force from the altar, ſtripped him of all his epiſcopal ornaments, and putting him into a ſack, with a large ſtone round his neck, threw him into the river Bruar, which flows paſt Skallholt, from whence his body was afterwards drawn, and buried in the cathedral church §.

* Biſhop Finnſen in his Eccleſiaſtical Hiſtory mentions, vol. I. p. 298, note b, that biſhop Thorlax had been likewiſe worſhipped as a ſaint in Sweden, but there are no veſtiges of this found in the old Swediſh Calendaria. The tenth of January is conſecrated to Paulus Eremita, and Auguſt the thirteenth to Hippolitus and Locis Martii.

† In the Icelandic annals he is commonly called *Auſſur*.

‡ The Icelandic annals call him Jon Geirreckſſon.

§ This account will ſerve to correct what is erroneous in Rhyzelii Epiſcopoſcopia, where the typographical faults in Peringſköld's Monumenta Uplandica, vol. I. p. 155, have been copied. Vide Finn. Hiſt. Eccl. Iſlan. vol. II. p. 471.

King Chriſtian III. began to introduce the Lutheran religion in the year 1540; but the zeal with which the biſhops (who were then very powerful) oppoſed him, prevented him from ſucceeding till the year 1551.

Since that period, the church of Iceland has enjoyed a happy tranquillity, every ſeed of diſcord being ſuppreſſed in its riſe, though ſome attempts were made to diſſeminate the evil.

Iceland is divided into one hundred and eighty-nine pariſhes, of which one hundred and twenty-ſeven belong to the ſee of Skallholt, and ſixty-two to that of Hoolum. All the miniſters are native Icelanders, and receive a yearly ſalary of four hundred or five hundred rix-dollars from the king, excluſive of what they have from their congregation.

LETTER VI.—TO CHEVALIER IHRE.

Of the Character and Manner of Life of the Icelanders.

Stockholm, September 1, 1774.

In a former letter I treated of the arrival of the Norwegians in Iceland, of their firſt form of government, and the changes they experienced through their own miſmanagement and the viciſſitudes of time: give me leave, Sir, to draw your attention to their character and way of life.

In like manner as their anceſtors only lived by war, piracy, the chace, and agriculture, ſo our new Icelandic coloniſts were ſtrangers to any fame but that acquired by the ſtrength of their arm, and knew no exerciſes but ſuch as a hardened body was able to ſupport.

To go to war, to plunder, burn and deſtroy, and ſurmount every obſtacle which oppoſed their deſigns, they deemed the ſureſt path to immortality; even their games gave them an opportunity of exerciſing both their ſtrength and agility of body.

Glimu-liſt, or the art of wreſtling, was general among them; though it is mentioned in their old hiſtories, that their heroes ſometimes made uſe of an artifice which was called *Lauſe-tók*, and is the ſame as what we call tripping up one's heels. *Skylmeſt*, or the art of fencing, was ſtill more common; for though they treated one another pretty roughly on theſe occaſions, yet thoſe rules of art were wanting which a weaker arm may at preſent apply to his advantage upon occaſion.

The *manjaſnadur* was held in the higheſt eſteem: a man, dextrous in that exerciſe, was held in the utmoſt veneration by them, and was celebrated even in their ſongs. This was a kind of ſingle combat, to which a man might challenge any one who was deſirous to be recorded in the annals of fame. Life or death was alike indifferent to theſe gladiators; and it was deemed a noble art to underſtand well how to ſharpen the inſtruments of death, as may be ſeen by *Rig ſthulu*.

The ſituation in which the Icelanders were in regard to the kings of Norway, who always kept a watchful eye over them, and ſought every opportunity to ſubjugate them, obliged them to have recourſe to other ſtates for a knowledge in government and literature; for this purpoſe they often ſailed to Norway, Denmark, Sweden, England, and Scotland. The travellers, at their return, were obliged to give an account to their chiefs of the ſtate of thoſe kingdoms through which they paſſed. For this reaſon hiſtory, and what related to ſcience, was held in high repute, as long as the republican form of government laſted; and the great number of ſagas and hiſtories which are to be met with in the country, if not all equally important, ſhew at leaſt the deſire they had of being inſtructed.

During this time Greenland was diſcovered by an Icelander, Eyrek Rauda, in 932; and America in 1001, by Bidrn Herjulfſon and Leif Erichſſon.

To

To ſecure themſelves, therefore, againſt their powerful neighbours, they were obliged to enlarge their hiſtorical knowledge; they likewiſe took great pains in ſtudying perfectly their own laws, for the maintenance and protection of their internal ſecurity. Thus Iceland, at a time when ignorance and obſcurity pervaded the reſt of Europe, was enabled to produce a conſiderable number of poets and hiſtorians. When the Chriſtian religion was introduced there, more were found converſant in the law than could have been expected, conſidering the extent of the country, and the number of its inhabitants. Fiſhing was followed among them; but they devoted their attention conſiderably more to agriculture *, which has ſince entirely ceaſed.

Two things have principally contributed towards producing a great change both in their character and way of life, viz. the progreſs of the Chriſtian religion under Olof Tryggwaſon, and the loſs of their liberty under King Harold. For if religion, on one ſide, commanded them to deſiſt from their ravages and warlike expeditions; the ſecular power, on the other, deprived them of the neceſſary forces for the execution of them: ſince this time, we find no farther traces of their heroic deeds, except thoſe which are preſerved in their hiſtories. Our preſent Icelanders give the preference to fiſhing, and the care of their cattle, to war.

The Icelanders are middle-ſized and well made, though not very ſtrong; and the women are in general ill-featured. The men have left off the cuſtom of wearing beards long ago, though you find them repreſented with them in Eggert Olafsen's travels through Iceland; a drawing which, perhaps, may repreſent an inhabitant of Sondmoer, in Norway, but by no means an Icelander †.

Vices are indeed much leſs common among them than in other parts, where riches and luxury have corrupted the morals of the people. Theft is ſeldom heard of; nor are they inclined to incontinence, though there are examples of perſons having been puniſhed more than once on that account.

Though their poverty diſables them from imitating the hoſpitality of their anceſtors in all reſpects, yet the deſire of doing it ſtill exiſts: they cheerfully give away the little they have to ſpare, and expreſs the utmoſt joy and ſatisfaction if you are pleaſed with their gift. When they want to ſhew themſelves particularly affectionate, they kiſs one another on the mouth on their viſits: they do the ſame to the huſband and the wife, the mother and the daughter; they are uncommonly obliging and faithful, and extremely attached to government ‡. They are very zealous in their religion §, and it muſt be

* Hans Finſſen, in his letter on the feaſibility of agriculture in Iceland, Copenhag. 1772, 8vo. demonſtrates this by a written document during the time of Snorre Sturleſon, page 64, which likewiſe appears from Landnama Bok, chap. 21.

† This, however, is ſubject to ſome exceptions: for the inhabitants of Omund Fiorden, and ſome families on the north ſide of the iſland, ſtill wear beards; and in Fnioſkadul lives a man named Benedict, known on account of his beard. Between 1740 and 1750 it happened, between the icy mountains of Sneefaelds Jokne, that two brethren dividing between themſelves the inheritance left them by their father, one of them, called Helge, gave his brother four rix-dollars for the excluſive right of wearing a beard, which right, in their family, was the ſole prerogative of their late father.

‡ To prevent ſmuggling, there is a ſevere penalty for piloting a ſtrange ſhip into harbour. When the philoſophic travellers made the coaſt, they were under neceſſity to force an Icelander to ſtay on board, and to ſerve them as a pilot. And though appeaſed by good treatment and preſents, he nevertheleſs carried the ſhip to an unſafe place, till the governor granted his leave to bring the ſhip to a ſafe anchorage. When the reaſon of this ſtrange behaviour was aſked, the Icelander anſwered, he would rather ſuffer himſelf to be cut in pieces, than to act againſt the regulations of his king. It is however told, that the inhabitants on the northern coaſt are not quite ſo docile, and therefore leſs obſequious.

§ An Icelander never paſſes a river, or any other dangerous place, without previouſly taking off his hat, and imploring divine protection; and he is always thankful for the protection of God, when he has paſſed the danger in ſecurity.

owned not entirely free from ſuperſtition. They have an inexpreſſible attachment for their native country, and are no where ſo happy. An Icelander, therefore, rarely ſettles in Copenhagen, though ever ſo advantageous conditions ſhould be offered him *.

On the other hand, one cannot aſcribe any great induſtry to them; they work on in the manner they are once uſed to, without thinking of uſeful improvements. Perhaps this defect lies more with the government, which being unacquainted with the nature of the country, did not make the neceſſary diſpoſitions and regulations for creating and encouraging induſtry. They are not cheerful in converſation, but ſimple and credulous, and have no averſion to a bottle if they can find opportunity; but it may eaſily be conceived, that this is not to be underſtood of all without exception. When they meet together, their chief paſtime conſiſts in reading their hiſtory (*fauguleſtur*); the maſter of the houſe makes the beginning, and the reſt continue in their turns when he is tired. Some of them know theſe ſtories by heart, others have them in print, and thoſe that have not, have them in writing. One of theſe paſtimes is *rumuleſtur*, conſiſting in the recitation of ſome verſes, which ſometimes are indifferently ſung. They beſides amuſe themſelves in their meetings with what they call *wike-waka*, where a man and woman take one another by the hand, and by turns ſing ſtanzas, which are a kind of dialogue, and to which the company ſometimes join in chorus. This however affords little amuſement to a ſtranger, as they generally ſing very bad, without obſerving time, or any other grace, particularly as they have not the leaſt knowledge of the modern improvements in muſic †.

To their diverſions likewiſe belongs that called *glaeder*, where one among them is diſguiſed; *ringbrud*, where ten or twelve men join hands, and form a ring in dancing; and it is reckoned a great dexterity to break through the ring, without deſtroying their order; *glimu-liſt*, which has been mentioned before, and means wreſtling; *hnatt-leikur*, or playing with bowls on the ice; *lyſtridin*, or riding races for a wager, &c. &c.

They are famous at playing at cheſs, and had formerly two ſorts of this game; one of which was called *jungfru ſchach* (ladies cheſs), and the other *riddare ſchach*‡ (knight's cheſs): at preſent only the laſt is cuſtomary. They alſo amuſe themſelves with *kotra* (a game at tables), they play on it *togtadilla* or *olöfstafl*, when the men are ranged blindfold, without dice, according to an old ſong which muſt be ſaid by heart. Beſides theſe games they have others called *Mylna Faringar-tafl*, and *Goda-tafl*. They alſo play ſome

* It ſeems that Providence wiſely inſtilled into the human heart the love of that ſoil whereon a man is born, and probably with a view that thoſe places, which are not favoured by nature with her choiceſt bleſſings, may not be left without inhabitants. It may be affirmed with ſome degree of certainty, that the love of one's native place increaſes in an inverſe ratio of its having received favours from nature. A Frenchman ſeldom or never feels that longing deſire for his home, which all Swedes are ſenſible of. A peaſant of Scania (a rich country in a mild climate) eats his haſty pudding (the favourite diſh in Scania) with equal pleaſure and enjoyment in whatever place it be; but a native of Elfredahl and Særna (places ill-favoured by nature) thinks his bread made of flour, mixed with the bark of trees in his own country more preferable to the beſt diſhes he eats in the low country. The chiefeſt wiſh of a Switzer is to die in his own country. When a Switzer in the French army ſung a certain ſong to his countrymen in the laſt war, there aroſe in the breaſts of all that heard him ſuch a diſeaſe like longing for their native country, that it became abſolutely neceſſary to the French generals to give the ſtricteſt injunctions, that this ſong ſhould never be heard again in the camp. This will appear incredible to thoſe who are acquainted with no other happineſs than that which is produced by the enjoyment of luxury, affluence, and voluptuouſneſs. It always recalls to the memory that fine paſſage in Seneca: "Ulyſſes ad Ithacæ ſuæ ſaxa ſic properat, quemadmodum Agamemnon ad Myvenarem nobiles muros; nemo enim patriam amat, quia magna, ſed quia ſua."

† I obſerved two kinds of muſical inſtruments in Iceland, one called *laang ſpil*, with ſix braſs ſtrings; the other called *fidla*, with two ſtrings made of horſes hair; both are played by a bow. I likewiſe heard of another inſtrument called *ſymphon*, but I never could get a ſight of it.

‡ Vide Letter of Arnus Magnæus to Widalin, communicated to me in manuſcript by Mr. Thorotti.

games

games at cards, called *Alkort*, *Handkarrer*, *Tru-ſpill*, and *Pamphile*; all theſe games are merely for amuſement, ſince they never play for money, which ſeems however to have been formerly cuſtomary among them, ſince in one of their old laws a fine is deſtined for thoſe who ſhould play for money.

LETTER VII.—TO CHEVALIER IHRE.

Of the Dreſs of the Icelanders.

Stockholm, Sept. 6, 1774.

THE Icelanders have made very few alterations, if any, in their dreſs in modern times. It is not elegant or ornamental, but yet neat, cleanly, and ſuited to the climate. The men all wear a linen ſhirt next to the ſkin, with a ſhort jacket, and wide pair of breeches over it. When they travel they wear another ſhort coat (*hempa*) over it. All this is made of coarſe black cloth (*wadmal*); only the inhabitants on the north ſide of Arnarfiord wear white clothes. On the head they wear large three cornered hats, and worſted ſtockings, and Icelandic ſhoes on their feet.

Some of them have ſhoes from Copenhagen, but as they are rather too dear for them, they generally make their own ſhoes, ſometimes of ox hide, but moſtly of ſheep's leather: the manner in which they make them is this; they cut a ſquare piece of leather, rather wider than the length of the foot, this they ſew up at the toes, and behind the heel, and tie it on with leather thongs. Theſe ſhoes are convenient enough where the country is level; but it would be very difficult for us, who are not uſed to them, to go with them amongſt the rocks and ſtones, though the Icelanders do it with great eaſe. I ſhall ſpeak of their fiſhing clothes afterwards.

The women likewiſe are always dreſſed in black *wadmal*: they wear a bodice over their ſhifts, which are ſewed up at the boſom; and above this a jacket laced before, with long narrow ſleeves reaching down to the wriſts. In the opening on the ſide of the ſleeve they have buttons of chaſed ſilver, with a plate fixed to each button, on which the lover, when he buys them in order to preſent them to his miſtreis, takes care to have his name and her's engraved. At the top of the jacket a little black collar is fixed (*ſtrutur*) of about three inches broad, of velvet or ſilk, and frequently trimmed with gold cord. The petticoat is likewiſe of *wadmal*, and reaches down to the ancles. Round the top of it is a girdle of ſilver, or ſome other metal, to which they faſten the apron (*ſwinte*), which is alſo of *wadmal*, and ornamented at top with buttons of chaſed ſilver. Over this dreſs they wear a *hempa*, or upper-dreſs, nearly reſembling that of the peaſants at Wingaker in Sweden, with this difference, that it is wider at bottom: this is cloſe at the neck and wriſts, and a hand's breadth ſhorter than the petticoat. It is adorned with a facing down to the very bottom, which looks like cut velvet, and is generally wove by the Icelandic women. On their fingers they wear gold, ſilver, or braſs rings. Their head-dreſs conſiſts of ſeveral cloths wrapped round the head, almoſt as high again as the face; it is tied faſt with a handkerchief, and ſerves more for warmth than ornament: girls are not allowed to wear this head-dreſs before they are mariageable. At their weddings they are adorned in a very particular manner: the bride wears cloſe to the face, round her head-dreſs, a crown of ſilver gilt. She has two chains round her neck, one of which hangs down very low before, and the other reſts on her ſhoulders. Beſides theſe ſhe wears a leſſer chain, from which a little heart generally hangs, which may be opened to put balſam or ſome other kind of perfume into it.

The dreſs here deſcribed is worn by all the Icelandic women, high and low, without exception; with this difference, that the poorer ſort have it of coarſe *wadmal*, with

ornaments of braſs; and thoſe that are eaſier in their circumſtances, of broad cloth, with ſilver ornaments gilt. I ſaw one of theſe dreſſes, which belonged to the bailiff's wife, and was worth at leaſt three hundred dollars. Perhaps it would not be diſagreeable to peruſe a liſt of the different articles which compoſe an Icelandic woman's dreſs, one of which Mr. Banks bought, in order to take to England, with his other Icelandic collections.

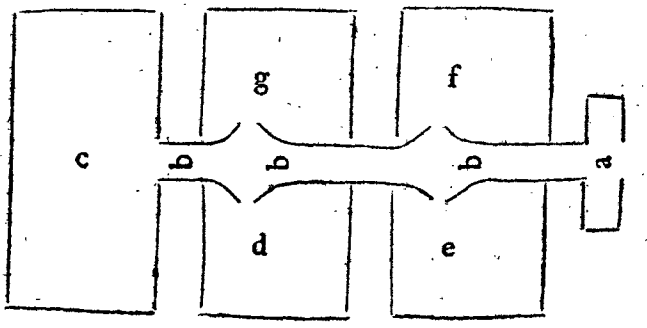
	Rix Dol.	Shil. Dan.
Hempa (upper dreſs)	4	0
Hættve (travelling hat)	5	0
Upphlutur (bodice)	2	24
Svinta (apron)	6	0
Treja (jacket)	4	3
Mallinda (girdle)	6	0
Fat (petticoat)	8	0
Kjedja (chain)	4	0
Laufa prionar (bodkins ornamented with ſilver)	6	0
Koffur (fillet)	2	0
Erma knappar (ſleeve-buttons)	1	24
Quen vetlingar (rough gloves)	0	46
Aubreida (a cloth to wrap their clothes in)	4	0
	53	46

LETTER VIII.—TO CHEVALIER IHRE.

Of the Houſes and Buildings of the Icelanders.

Stockholm, Sept. 14. 1774.

THE houſes of the Icelanders are not alike throughout the country. According to ſome deſcriptions, they are tolerable on the north ſide of the iſland; but on that part of Iceland which I have ſeen, they were all extremely bad, excepting thoſe of the governor at Beſſeſtedr, the phyſician's at Seltiarnarnes, and the ſheriff's at Wido, which were built of ſtone at the king's expence. In ſome parts the dwellings and other buildings of the Icelanders are made of drift-wood, in others they are raiſed of lava, almoſt in the ſame manner as the ſtone-walls we make for incloſures, with moſs ſtuffed between the lava. In ſome houſes the walls are wainſcotted on the inſide. The roof is covered with ſods laid over rafting, or ſometimes over ribs of whales, which is both more durable and more expenſive than wood. The timber-work reſts on many beams laid length-ways. The walls are about three yards high, and the entrance ſomewhat lower. The plan of one of theſe houſes is here annexed, to give a better idea of it.



(a) is

(a) is the door or entrance of the long lobby; (bbb) is about ſix feet broad, and admits the light through ſome holes in the roof, upon which a hoop, with a ſkin ſtretched over it, is laid. At the end of the lobby is a room (c) where the women do their work, and where the maſter of the houſe generally ſleeps with his wife. The walls of this room are wainſcoted; it has a ceiling and floor, ſometimes even ſmall glaſs windows, but no fire-place. On both ſides of this long lobby are four rooms, two on each ſide, of which (d) is the kitchen, (e) the room made uſe of to eat in, (f) the dairy, and (g) the ſervant's room: theſe rooms have neither ceilings nor floors, and the walls are ſeldom or never lined. The windows are made of the chorion (*liknarbelgur*) and amnios of ſheep (*vatzbelgur*), or the membranes which ſurround the womb of the ewe. Theſe are ſtretched over a hoop, and laid over an opening in the roof, upon which a wooden ſhutter is let down, if the weather be ſtormy. They have not even a chimney in the kitchens, and only lay their fuel between three ſtones, and the ſmoke iſſues from a ſquare hole in the roof. Beſides this houſe, they have a booth or ſhed to keep their fiſh in (*ſkæmma*), ſometimes another for their clothes, &c. &c. and not far off the ſtable for their cattle. In the poorer ſort of houſes, they employ for the windows the inner membrane of the ſtomach of animals, and which they call *ſkæna*; this is not ſo tranſparent as the beforementioned membrane.

LETTER IX.—TO MRS. CARLSON.

Of the Food of the Icelanders.

Gothenburg, March 20.

THOUGH it cannot afford any great pleaſure to examine the manner in which the Icelanders prepare their food, particularly after having ſo lately taſted at your table all the dainties of the four parts of the globe; I will, nevertheleſs, perform my promiſe in communicating to you a deſcription of it. Methinks I ſee you ſometimes diſdaining their diſhes; but, I aſſure you, an Icelander is not leſs happy for being unable to ſeaſon his food with the productions of a diſtant climate; he is content with what nature affords him, ſatisfies the cravings of his ſtomach, and enjoys his health, whilſt we frequently forfeit ourſelves by feaſting on delicacies, and loathe the moſt wholeſome food.

The larders and pantries of the Icelanders are ſeldom ſo well ſtored as to contain every one of the articles at one time, which I am going to mention; ſome of them, however, they muſt be abſolutely provided with, as their food entirely conſiſts of the following articles.

Bread of ſeveral ſorts, chiefly four biſcuit * from Copenhagen; but they have not much of this, as it is too dear for them; they content themſelves therefore with providing it for weddings, and other entertainments. Some, inſtead of it bake themſelves bread of flour of rye, though they likewiſe get ſome from Copenhagen. The manner

* In moſt northern countries the inhabitants live on rye-bread; the flour taken to prepare it is ſeldom bolted, and it is commonly prepared with ſour ferment or leven, which gives the bread an acidulated taſte, diſagreeable, and reſiſting the ſtomachs of weak perſons, but palatable and wholeſome to thoſe of a ſtrong conſtitution. The ſour paſte communicates an agreeable acidity to this bread; and as the northern climates, on account of their long winters, and the confinement of people in heated rooms full of noxious effluvia, as well on account of the chiefly ſalt-meat diet of the inhabitants, make the people inclined to the ſcurvy; this acidulated bread, the ſour crout, and in Ruſſia their ſour drink called *Guaſs*, afford ſuch powerful antiſeptics, that with the diet here deſcribed, the ſcurvy ſeldom or ever gains ground among the people. Theſe ſour biſcuits, no doubt, are likewiſe made of rye-flour, or of rye and wheat mixed together, ground without bolting, and acidulated by fermentation with ſour leven.

in which they bake it is thus: the flour is mixed with some fermented whey (*syra*), and kneaded into dough, of which they make cakes one foot in breadth, and three inches thick; these are boiled in water or whey, and then dried on a hot stone, or an iron plate.

Flour of *Fiálgrás* (rock-grass*), a cask of which well cleaned and packed costs a rix-dollar; it is first washed, and then cut into small pieces by some, though the greater number dry it by fire or the sun, then put it into a bag, in which it is well beaten, and lastly worked into flour by stamping.

Flour of *Kornsyra* † is prepared in the same manner, as well as the two other sorts of wild corn *melur* ‡, by separating it from the chaff, by pounding, and lastly grinding it.

Surt smoer (sour butter). The Icelanders seldom make use of fresh or salt butter, but let it grow sour before they eat it: in this manner it may be kept twenty years, and even longer; and the Icelanders look upon it as more wholesome and palatable than the butter used amongst us. It is reckoned better the older it grows, and one pound of it then is as much valued as two pounds of fresh butter.

Striug, or whey boiled to the consistence of sour milk, and preserved for the winter.

Fish of all kinds, both dried in the sun and in the air, and either salted or in winter frozen: those prepared in the last manner are preferred by many.

The flesh of bears, sheep, and birds, which is partly salted, partly hung or smoaked, and some preserved in casks, with sour fermented whey poured over it.

Misost, or whey boiled to cheese, which is very good. But the art of making other kinds of good cheese is lost, though some tolerably palatable is sold in the east quarter of Iceland.

Beina striug, bones and cartilages of beef and mutton, likewise bones of cod, boiled in whey, till they are quite dissolved; they are then left to ferment, and are eat with milk.

Skyr, the curds from which the whey is squeezed, are preserved in casks, or other vessels; they are sometimes mixed with black crow-berries, (*empetrum baccis nigris*) or juniper berries, and are likewise eat with new milk.

Syra is sour whey, kept in casks, and left to ferment, which, however, is not thought fit for use till it is a year old.

Blanda is a liquor made of water, to which a twelfth part of *syra* is added. In winter it is mixed with the juice of thyme, and of the black crow-berries, or the *empetrum nigrum*.

They likewise eat many vegetables §, some of which grow wild, and others are cultivated; as also shell-fish ‖ and mushrooms ¶.

The

* Lichen Islandicus, Fl. Suec. 1085. Fl. Lappon, 145. † Polygonum Bistorta.

‡ (1) Arunda arenarai, (2) arundo foliorum lateribus convolutis.

§ The following catalogue of plants used for food in Iceland is taken from the journey of Eggert Olafsen:

Rumex acetosa, in the Icelandic language called	*Sura.*
- - - digynus,	*Olafs Sur.*
- - - patientia,	*Heimis niole.*
Taraxacum,	*Aetti fifill.*
Carex Lin. pinguicula, *Lifia gras*, used against the dysentery.	
Trifolium pratense flore albo.	
Potentilla argentea, *Mura.*	
Plantago maritima Lin. foliis linearibus,	*Kattartunga.*
Angelica archangelica, *Huônn; Ætte huônn.*	
Lichen Islandicus, *Fialla graus.*	
- - Lichenoides, *Klauungur.*	

Lichen

The Icelanders in general eat three meals a day, at ſeven in the morning, at two in the afternoon, and at nine in the evening.

In the morning and evening they commonly eat curds mixed with new milk, and ſometimes with juniper berries, and thoſe of *empetrum nigrum*. In ſome parts they alſo have pottage of *fiálgrâs*, which, I aſſure you, is very palatable; *vallidraſli*, or curdled milk, boiled till it becomes of a red colour; *ſeiddmijolk*, or new milk, boiled a long while. At dinner, their food conſiſts of dried fiſh, with plenty of ſour butter. They alſo ſometimes eat freſh fiſh, and, when poſſible, a little bread and cheeſe with them. It is reported by ſome, that they do not eat any fiſh till it is quite rotten; this report, perhaps, proceeds from their being fond of it when a little tainted: they however, frequently eat fiſh which is quite freſh, though in the ſame manner as the reſt of their food, often without ſalt.

On Sunday, and in harveſt-time, they have broth made of meat, which is often boiled in *ſyra*, inſtead of water; and in winter they eat hung or dried meat.

Their common beverage is milk, either warm from the cow, or cold, and ſometimes boiled: they likewiſe make butter-milk, with or without water. On the coaſts they generally drink *blanda* *, and ſour milk; which is ſold, after it is ſkimmed, at two-fifths of a rix-dollar a caſk: ſome likewiſe ſend for beer from Copenhagen, and ſome others brew their own. A few of the principal inhabitants alſo have claret and coffee. The common people ſometimes drink a kind of tea, which they make from the leaves of Holta-ſollyg † and Spudwell ‡.

This is the uſual manner of life in Iceland. In all countries the living of the poor differs eſſentially from that of the rich; and if an Iceland gentleman can afford to eat meat, butter, ſhark, and whale, the peaſants are obliged to content themſelves with fiſh, blanda, milk, pottage of rock graſs, and *beina-ſtriug*. Though the Icelanders cannot in general be ſaid to be in want of neceſſary aliment, yet the country has ſeveral times been viſited by great famines: theſe, however, have been chiefly owing to the Greenland floating-ice, which, when it comes in great quantities, prevents the graſs from growing, and puts an entire ſtop to their fiſhing.

I need not acquaint you, that we were not neceſſitated to ſubmit to their manner of life during our ſtay in Iceland. Inſtead of *blanda* we drank port, and ſeveral other

* In the Elfdalln of Wermeland in Sweden, the common beverage of the country people is milk, mixed with water, and called by them *Blanda*.

† Dryas octopetala. ‡ Veronica officinales.

Lichen Coraloides, *Kræda*.
- - Niveus, *Mariu-gras*.
- - Leproſus, *Geitna-ſkof*.
Arundo Arenaria, *Melur*.
- - foliorum lateribus convolutis.
Cochlearia, *Skarſa-kaal*.
Plantago anguſtifolia, *Selgreſe*.
Epilobium tertagonum, *Purpura-blomſtur*.
Polygonum biſtorta, *Kornſura*.
Siſymbrium, Lin. *Kattar-balſam*.
‖ Ventroſa craſſa, *Kuſkel, ſkelkuſkel*.
Domiporta, *Kudungur, kuſungur, kongur*.
Mytulus, *Kräklingur*.
- - - Major, *Ada*.
¶ Agaricus cauleſcens, pileo albo, *Ætte-ſveps*.
- - - ſupra pileo plano, *Ætte-ſvepr*.
- - - ſubconvexo, *Reyde-kula*.
- - - of an unknown ſort, *Bleikula*.

ſorts of good wine; and a French cook prepared for us ſome ſavoury diſhes, and excellent puddings.

However, as we wiſhed to try every thing, we prevailed upon the phyſician Biarne Paulſen, who had invited us to dinner, to entertain us after the Icelandic manner. We did not forget the good Swediſh cuſtom of taking a glaſs of brandy before dinner, which was here genuine; we had only once Daniſh diſtilled corn-brandy, which was ſerved up with biſcuit, cheeſe, and ſour butter. In the middle of the table was placed a diſh with dried fiſh cut ſmall; the other diſhes were a piece of good roaſt mutton, broth with *ſyra*, and a diſh of ſalmon-trouts, &c. &c. We eat with a very good appetite; but the ſour butter and dried fiſh were not often applied to: on the whole, we eat a greater quantity of bread than the Icelanders generally do.

So elegant an entertainment could not be without a deſert; and for this purpoſe ſome fleſh of whale and ſhark (*haf kal*) was ſerved. This is either boiled or dried in the air, looks very much like ruſty bacon, and had ſo diſagreeable a taſte, that the ſmall quantity we took of it, drove us from the table long before our intention. Moſt probably you already thank me for my entertainment, and are happy to ſee the end of my letter.

LETTER X.—TO CHEVALIER IHRE.

Of the Employment of the Icelanders, and their Chronology.

Stockholm, Sept. 6, 1774.

THE Icelanders principally attend to fiſhing, and the care of their cattle.

On the coaſts the men employ their time in fiſhing, both ſummer and winter; on their return home, when they have drawn and cleaned their fiſh, they give them to their wives, whoſe care it is to dry them. In the winter, when the inclemency of the weather prevents them from fiſhing, they are obliged to take care of their cattle, and ſpin wool. In ſummer they mow the graſs, dig turf, provide fuel, go in ſearch of ſheep and goats that were gone aſtray, and kill cattle. They likewiſe full their *wadmal*, or coarſe cloth; for which purpoſe they make uſe of urine, which they alſo employ in waſhing and bucking, inſtead of ſoap and pot-aſhes. The men likewiſe prepare leather, for which they uſe *maid-urt* (ſpiraca ulmaria) inſtead of birch-rind. Some few work in gold and ſilver, and others are inſtructed in mechanics, in which they are tolerable proficients.

As a proof of this, I need only mention a ſledge which a peaſant contrived ſome years ago in the form of a ſhip with ſails, and large enough to contain four or five perſons, that would ſail in the winter ſeaſon, in an even country. Unluckily two of his ſons, in ſailing home from church, overturned, and broke the whole carriage to pieces.

On the weſt ſide of the country they make veſſels of floating wood, large enough to contain from three to twelve tons, and make their charge according to the ſize of the veſſel, from four to ſix dollars.

The women prepare the fiſh, take care of the cattle, manage the milk and the wool, ſew, ſpin, and gather eggs and down. When they work in the evening, they uſe, inſtead of an hour-glaſs, a lamp, with a wick made of *ſiva* (epilobium) dipt in train-oil, which is ſo contrived as to burn four, ſix, or eight hours.

Their

Their work is in ſome meaſure determined by their *bya-lag*, or by-laws * of their villages, in which the quantity of work they are bound to perform in a day is preſcribed to them: they ſeldom do ſo much work now, ſo that it is called only *medelmans värk*, or the work of a man of middling ſtrength. According to this preſcription, a man is to mow as much hay in one day, as grows on thirty fathoms ſquare of manured ſoil, or forty fathoms ſquare of land not manured, or he is obliged to dig ſeven hundred pieces of turf eight feet long and three broad. If ſo much ſnow falls as to reach to the horſes bellies, which they call *quedſnio*, he is to clear away daily the ſnow for a hundred ſheep. A woman is to rake together as much hay as three men can mow, or to weave three yards of *wadmal* a-day.

The wages of a man are fixed at four dollars, and twelve yards of *wadmal*; and thoſe of a woman at two dollars, and five yards of *wadmal*. When men are ſent a fiſhing out of the country, there is allowed to each man, by the *bya-lag*, from the twenty-fifth of September to the fourteenth of May, ſix pounds of butter, and eighteen pounds of dried fiſh every week. This may appear to be too great an allowance; but it muſt be remembered, that they have nothing beſides to live upon. When they are at home, and can get milk, &c. &c. every man receives only five pounds of dried fiſh, and three quarters of a pound of butter a-week.

As the diviſion of time among the Icelanders is not determined according to the courſe of the ſun, but by their work, this is perhaps the moſt proper place to ſay ſomething of it. Though they have, like us, four different ſeaſons, they only count two; the ſummer, which begins the Thurſday before the ſixteenth of April; and the winter commences on the Friday before the eighteenth of October. During the firſt ſeaſon they perform their ſummer-work, and in the latter attend to their winter amuſements. Theſe two ſeaſons are afterwards divided into twelve months, as with us, which have their common names; but in antient records, and among the lower claſs of people, are called, 1. *Midſvetrar*. 2. *Föſtugangs m.* 3. *Iafndaegra m.* 4. *Sumar m.* 5. *Fardaga m.* 6. *Nöttleyſu m.* 7. *Midſumar m.* 8. *Heyanna m.* 9. *Adratta m.* 10. *Slaatrunar m.* 11. *Ridtidar m.* 12. *Skammdeigris m.* Day and night are not divided into a certain number of hours, but into the following diviſions: *Otta* is with them three o'clock in the morning; *Midur morgon* or *Herdis riſmal*, five o'clock; *Dagmal*, half paſt eight; *Haadeye*, eleven; *Noon*, three in the afternoon; *Midur aſton*, ſix in the morning; *Nattmall*, eight; and *Midnatt*, twelve o'clock at night.

When they want to know what o'clock it is, they attend to the courſe of the ſun, and the flux and reflux of the ſea; but generally they make uſe of an art to diſcover the ſun by their fingers. Watches are very rare among them; every peaſant, however, has an hour-glaſs.

* "By-laws are ſaid to be orders made in court-leets or court-barons, by common aſſent, for the good of thoſe that make them, farther than the public law binds." *Atterbury*. See *Johnſon's Dict.* Though this may probably be the preſent meaning of the word *By-law*, it is not, however, the original meaning of the word; for it is derived from the old Saxon word *by* or *bye*, ſignifying a town, from the Gothic word *bo*, to inhabit; and agreeable to this are many Engliſh names of towns, viz. *Aſh-by*, *Whit-by*, &c. &c. *By-law*, therefore, ſignified formerly laws made by townſhips, and by diſtricts belonging to a town, or to a leet, which amounted ſometimes to a third part of a ſhire. Theſe laws were made by common aſſent, and for the good of thoſe that made them, which is, or ought to be, the chief aim of all laws, and they extend farther than the public law binds; becauſe the law of the land muſt be general, and cannot provide for all particular caſes of ſingle towns and diſtricts. The ſpecial regulations and reſtrictions, therefore, made by the common aſſent of the towns-people, for the common good of that particular town, beyond the law of the land, are *by-laws*, laws of the *bye* or *town*. The Icelandic word *bya-lag*, ſignifies laws of villages or townſhips; and it confirms the ſignification we have given to the Engliſh word *by-law*.

LETTER XI.—TO CHEVALIER BACH.

Of the Diſeaſes in Iceland.

Stockholm, Oct. 1, 1776.

You require, Sir, that I ſhould give you ſome account of the diſeaſes common in Iceland. I will obey your commands, though it is more the province of a phyſician to undertake the ſubject, as it requires ſo much exactneſs and penetration.

As I have been ſo happy as to be unacquainted with any diſeaſe from my own experience, I have as little endeavoured to gain any knowledge by reading ſuch books as treat of them; you will therefore pardon me if my account is not very perfect.

The climate of the country, and the purity of the air, contribute very much to make the Icelanders ſtrong and healthy, though their food and way of life frequently produce the contrary effect. Young children, for example, are not ſuckled more than two or three days, and afterwards brought up with cows milk, which, in times of dearth, is mixed with flour and water.

I remember to have heard, that this is alſo cuſtomary in ſome parts of Finland; but a different manner of living may render that unwholeſome in Iceland, which is leſs dangerous in another place: and I think I may ſafely venture to affirm, that the food and mode of living in Iceland do not contribute to the ſtrength of the inhabitants. One ſeldom meets with any of them above fifty or ſixty years of age, and the greater part are attacked in their middle age by many grievous complaints.

It is remarkable that among the female ſex, who there, as almoſt every where elſe, live to a greater age than the men, thoſe particularly attain to an advanced life who have had many children. There are a great many of this claſs, as the women are commonly very fruitful; and it is no rare thing to meet with a mother who has had twelve or fifteen children.

Among the diſeaſes that are moſt prevalent, the ſcurvy (*Skyrbuigar*) is the moſt common. In ſome, it makes its appearance in the ſame manner as with us, but in others it produces the moſt dreadful ſymptoms, and is then called *liktraad*, or leproſy, which, however, differs from that horrid diſeaſe ſo common in the Eaſt. Its firſt appearances are, ſwellings in the hands and feet, and ſometimes alſo in other parts of the body; the ſkin becomes ſhining and of a bluiſh caſt, the hair falls off, the ſight, taſte, ſmell, and feeling are weakened, and often quite loſt; biles appear on the arms, legs, and face; reſpiration becomes difficult, and the breath fœtid; aching pains are felt in all the joints, a breaking-out ſpreads over the whole body, and is at laſt converted into wounds, which generally terminate in death.

The Icelanders make uſe of antiſcorbutic decoctions, likewiſe baths, with turnips boiled in them; but chiefly mercurial remedies, by means of which the diſeaſe may be removed in its beginning. This diſeaſe is not contagious, but very obſtinate; and it is remarkable, that two generations may be entirely free from it, when it ſhall appear in the third. It does not always prove mortal, though many are tormented with it twenty or thirty years.

The gout (*torvàrk*) moſt men have in their hands who go out a-fiſhing probably becauſe they are obliged to handle and manage the wet fiſhing tackle in cold weather.

The

The St. Anthony's fire, in Icelandic *a ama*, is pretty common. They make uſe of earth-worms (*anamadkur*) to cure it, which they bind alive on the wounded part; and when they become dry, others are applied till the diſeaſe is removed.

The jaundice, in Icelandic *guulſot*; the fever, *kveſsot*; the pleuriſy, *tak*, which is ſometimes infectious, and then is called *landfarſot*, or an infectious diſeaſe, is frequently got by cold; lowneſs of ſpirits, *careinoma infantum*, in Icelandic *krabbe*, *a atumein* the ſpleen, and obſtructions, are very common. In later years the rickets made their appearance; and the venereal diſeaſe was not known among them till the year 1753.

Beſides the antiſcorbutic plants, which are to be found in plenty in Iceland, they have a number of hot baths, which are of great benefit in the cure of theſe diſeaſes.

There is an apothecary's ſhop eſtabliſhed on the iſland, and four hoſpitals for the poor and leprous, the care of which is committed to their moſt ſkilful phyſicians, with proper aſſiſtants.

LETTER XII.—TO CHEVALIER IHRE.

Of Fiſhing and Fowling, and the Breed of Cattle in Iceland.

Stockholm, October 3, 1774.

THE inhabitants who live near the coaſts employ themſelves nearly all the year in fiſhing; and even thoſe who live in the inland parts of the country come to the ſea-ſhore at certain ſeaſons of the year. Every maſter of a family has a particular fiſhing-dreſs, and is obliged to furniſh one to his ſervant as ſoon as he puts out to ſea. They are made of ſheep or calves ſkins, which, in manufacturing, are frequently rubbed over with train-oil. They conſiſt of the following articles: *leiſtrabrakur* are breeches and ſtockings all in a piece, which come up pretty high above the hips, and are laced on very tight; *ſtackur*, a wide jacket faſtened round the neck and the middle of the waiſt; *taatillar*, or coarſe fulled ſtockings, or ſtiff worſted; and *ſjoſkor*, or water-ſhoes, of thick leather.

Their boats are commonly ſmall, and only contain from one to four men, with theſe they fiſh near the ſhore; but with their larger boats, which are made to contain from twelve to ſixteen men, and are provided with ſails, they frequently venture from four to eight miles from the ſhore.

In theſe veſſels they always carry a man extraordinary, whom they call *formann*. He ſits at the helm; and the others, who are called *haaſetters*, obey his commands. At his call they all aſſemble at an appointed time near the veſſel, provided with knives, fiſhing-lines, and other proper tackle: they make uſe of ſhells, and ſometimes the fleſh of quadrupeds and birds for bait.

As ſoon as the boat is off the ſhore, they all take off their hats and caps, pray for good ſucceſs, and recommend themſelves to the divine protection by a prayer and hymn, which they call *vararſaungur*, and then ſtand out to ſea. As ſoon as they are come to a place where they expect a good draught, two of them ſit down at the helm, to prevent the boat's being moved out of its place by the current, and to take care that the fiſhing-lines are not entangled. In this manner they continue fiſhing the whole day; and when the boat will not contain any more fiſh, they cut off the heads of all the fiſh they have caught, which they throw into the ſea, together with their entrails. This not only enables them to carry a greater number of fiſh aſhore, but alſo invites many inſects to the place, which affords good bait.

At their return all the fiſh are brought aſhore, and divided into equal ſhares: one ſhare belongs to the owner of the boat, though he ſhould not be out at ſea with them, and this is called *ſkipleiga* (*ſhipſhire*); another is given to him who ſat at the helm; a third to him who governed the ſails; in a word, every fiſher gets a ſhare. But this equal diviſion is only made with the ſmaller fiſh; for if any one in the boat is ſo fortunate as to catch a turbot or other valuable fiſh, it is immediately cut into pieces, and the three beſt given to him who caught it.

As ſoon as they have thus ſhared them, every one cuts off the heads of his fiſh, draws them, and after cutting them up from top to bottom on the ſide of the belly, takes out the back-bone from that part where it is fixed to the head, down to the third joint below the heart. If the weather be ſuch as to give them hopes of drying their fiſh next day, they lay them with the fleſhy ſide facing one another; but if the weather is unfavourable, they lay the pieces on a heap with the ſkinny ſide uppermoſt, and this they call *lagga i kaſe*; if they lie too long in this poſition (one above another) they ſpoil, and are then ſold to the merchants at a lower price, under the denomination of *kaſad fiſk*. When the weather is fair, theſe pieces are ſpread ſeparately on ſtones, or on the ſhore, and are frequently turned by the women, till they are entirely dry; this often requires a fortnight's time, and ſometimes more. The fiſh prepared in this manner are called *flatfiſkur* (flat-fiſh).

In ſome parts they do not dry the fiſh on ſtones or on the ſhore; but after they have ripped them up, place them in rows on ſtones which are laid croſs-wiſe in a houſe built for that purpoſe; theſe huts are called *hiallur* in Iceland, and ſomewhat reſemble the ſheds in which ſmiths ſhoe horſes. Theſe fiſh are called *hengi-fiſkur*, or hung-fiſh.

The fiſh they principally catch is cod, of which they have ſeveral different ſorts, under the names of *thyrſk-liugur*, *upſe*, *iſk*, *langr*, *kerla*, &c. &c. Beſides theſe they have ſoles, flounders, herrings, ſalmon, ſalmon-trout, trouts, and ſeveral others. Of the trouts it has been obſerved, that when they come up the rivers and brooks, and approach the hot ſprings, they are fond of ſtaying in the lukewarm water, where they grow ſo fat as to be ſcarcely eatable.

It is unneceſſary to ſay that the ſeas, as well as the rivers and lakes, abound with fiſh: I will therefore only mention the whale, of which there are ſeveral ſorts, divided by the natives into two claſſes, thoſe with and thoſe without tuſks.

The firſt are again divided into *ſkidis fiſkur*, ſmooth-bellied, and *reydar fiſkur*, or wrinkle-bellied. Among the *ſkidis fiſkur*, who have whale-bone inſtead of teeth, the *ſlettbakr*, whoſe back is flat, is the largeſt; and ſome have been caught one hundred yards in length. The *hnufubakr* has a hump on his back, and is next in ſize, being from ſeventy to eighty yards long. Of all the known whales, the *ſteipereidur*, which belongs to the claſs of the *reydar fiſkur*, is thought to be the largeſt, as there are ſome one hundred and twenty yards in length. Then follow the *hrafn reydur* and the *andarneſia*; they are all conſidered as very dainty food; and the Icelanders ſay, the fleſh has the taſte of beef.

The whales which have teeth inſtead of whalebone, are alſo divided into two claſſes, thoſe that are eatable and thoſe that are not. To the firſt claſs belong the *hnyſen*, *hnydingur*, *hundfiſkur*, and *haahyrningur*: to the laſt, to which the name of *illwhale* (bad whales) is given, are reckoned the *rodkammingur* and *naahvalur*. Theſe are forbidden as food by ſome ancient regulations, and particularly by the church laws. The Icelanders believe that the firſt ſort are very fond of human fleſh, and therefore avoid fiſhing in ſuch places where they appear.

The other kinds of whales are ſometimes ſtruck with harpoons, and ſometimes caught with nets. The Icelanders, however, ſeldom venture to attack the larger ones, as their

boats are ſmall, and they unprovided with inſtruments proper for that purpoſe. They ſtand in ſo great dread of ſome of them, that when out at ſea they are afraid to mention even their names, and carry dung, brimeſtone, juniper-wood, and ſome other articles of the ſame nature in their boats, in order to terrify and prevent their too near approach. Notwithſtanding, it now and then happens that they catch ſome of the largeſt ſort, which is done when the fiſh approach too near the ſhore at high water, and are unable to return as faſt as the water ebbs, where they are killed with ſtones and lances. In this manner they had caught a large whale the year before our arrival at Hafnefiord.

To their fiſhery likewiſe may be reckoned the catching of *liadogs*, which is very conſiderable in ſome parts. They have four ſorts of them, *roſtungur*, *vade ſelur*, *blaudu-ſeller*, and *gran-ſelur*. They are fatteſt in winter, and yield three or four pounds of fat, of which each pound produces ſeven quarts of oil: in ſummer, on the contrary, they are very lean. Their fleſh is eaten, and their fat ſold at five yards a pound. The ſkin is ſold by weight, at the rate of ſixty yards for twenty pounds.

Though the ſituation of Iceland renders it extremely proper for fiſhing, the fiſhery has decreaſed very much lately; which is partly owing to the many foreign ſhips which yearly come to fiſh in thoſe parts, and partly to the want of men, as the number of people has decreaſed greatly. But I believe the chief cauſe is the monopoly of the trading company, which very much oppreſſes the country.

If the people had more encouragement, there would be more emulation and diligence amongſt them than at preſent; for they are obliged to ſell a *vaett*, or five pounds of dried fiſh to the company, at the rate of five-ſixths of a dollar, which they ſell in Hamborough, where the greateſt part of what is caught in Iceland is uſually ſent, for five banco-dollars.

Next to fiſhing the principal ſupport of the Icelanders is the breeding of cattle.

Their beeves are not large, but very fat and good. It has been reported by ſome, though without foundation, that there are none among them with horns: it is true, however, that they ſeldom have any.

They keep their large cattle at home in their yards the greater part of the year, though ſome have places appropriated to them in the mountains, which they call *ſatr*, where they ſend their cattle during the ſummer, till the hay harveſt is over. They have a herdſman to attend them, and two women to milk them, and make butter and cheeſe. It is common to meet with oxen running wild about the mountains, which are however drove home in autumn, as every one knows his own by a particular mark put upon them.

The principal food of the cattle is hay, and they reckon a ſtack of hay for a cow's winter proviſion; one ſtack conſiſts of thirty cocks of hay grown on manured land, and forty cocks grown on unmanured land. When there is a ſcarcity of fodder, they feed them in ſome parts with *ſteenbitr*, a kind of fiſh, which, together with the heads and bones of cod, is beaten ſmall, and mixed with one quarter of chopped hay. The cattle are fond of it, and yield a good deal of milk after it; but yet it is ſaid to have a bad taſte: they only make uſe of this food in time of need.

Their cows yield four quarts of milk a day, though they have ſome that give from eight to fourteen in twenty-four hours. A cow that yields from ſix quarts is reckoned a good one, and muſt not ſtand dry above three weeks before ſhe calves.

A young calf is fed with milk for ten days or a fortnight, afterwards the milk is mixed with water and chopped hay, and at laſt they give it whey inſtead of milk.

The uſual price of a cow, as well as of a horſe, is one hundred and twenty yards, thirty of which make a dollar. However, ſometimes the better ſort of horſes are ſold for

for eight or ten dollars. They have yet leſs trouble with their horſes than their cows; for though ſome ſaddle-horſes are kept in ſtables during winter, the greater number of them are obliged to provide for their own ſubſiſtence, and when they cannot find this on land, they go in ſearch of ſea-weeds on the coaſts; but when a great quantity of ſnow has fallen, the natives are obliged to clear it away for them.

There is no breed of cattle ſo much attended to in Iceland as that of ſheep. As theſe can eaſily find ſubſiſtence there, the Icelanders look upon it as leſs troubleſome and leſs expenſive to breed them; and there are many peaſants who have between three and four hundred ſheep. Before the epidemical diſeaſe, which raged among the ſheep from 1740 to 1750, it was not uncommon to ſee flocks of one thouſand or twelve hundred, the ſole property of one perſon.

I will not venture to examine whether it would be more advantageous to huſbandry to keep more cows than ſheep; but as the inhabitants ſeem to be more inclined to breeding of ſheep, it would be well if ſuch regulations were made as might enable them to cultivate it with more advantage.

This has really been thought of by government; for about twenty years ago they ſent Baron Haſtfer, a Swede by birth, to Iceland for that purpoſe. He made ſeveral regulations, and invented and prepared a kind of powder, as a cure for the diſeaſes among ſheep, which is very much made uſe of there, as well as in Denmark and Norway. They ſpeak of him every where in Iceland, as of a man who had great knowledge in this branch of huſbandry, and a ſincere deſire to redreſs all defects.

I know not if the report was well founded which was ſpread all over the country, that the trading company endeavoured to obſtruct him in the execution of this deſign; ſo much however is certain, that the country has reaped little or no benefit from Baron Haſtfer's depoſitions.

The Icelandic ſheep differ from ours in ſeveral particulars; they have ſtraight ears ſtanding upright, a ſmall tail, and it is common to meet with ſheep that have four or five horns: in ſome places they are kept in ſtables during winter, but they are generally left to ſeek their food themſelves in the fields.

It is remarkable that they are fond of hiding themſelves in caves (of which there are a great many in Iceland) in ſtormy, tempeſtuous weather. But when they cannot find any retreat during a heavy fall of ſnow, they place themſelves all in a heap, with their heads to the middle, and bent towards the ground, which not only prevents them from being ſo eaſily buried under the ſnow, but facilitates the owner finding them again. In this ſituation they can remain ſeveral days; and there have been examples of their having been forced by hunger to gnaw off each other's wool; which forming into balls in their ſtomachs, preſently deſtroys them. They are however generally ſoon ſought for and diſengaged. There are no wild ſheep, as has been pretended by ſome, for they all have their owners, who keep an exact account of them; and when they are driven to the mountains, they are ſcarcely ever without a ſhepherd to attend upon them.

Their food is graſs and herbs, and the ſcurvy graſs (*cochlearia*) in particular makes them ſo fat, that they yield more than twenty pounds of fat. They reckon one caſk of dunged hay, and two not dunged, for a ſheep's winter proviſion. When there is a bad crop, they are obliged to put up with fiſh bones chopped, as well as the other cattle.

Good ſheep give from two to ſix quarts of milk a day, of which both butter and cheeſe is made; it has likewiſe a good taſte when boiled.

The principal profit they have from their ſheep ariſes from the wool; this is not ſhorn off as among us, but remains on till the end of May, when it looſens of itſelf, and is ſtripped off at once like a ſkin, and is then called *Ullafæll*. The whole body is by this time

time covered again with new wool, which is quite ſhort and fine, and of better quality than the Swediſh. It continues to grow the whole ſummer, and becomes coarſer and ſtiffer towards autumn; it is likewiſe ſmooth and gloſſy, ſomewhat reſembling camel's hair, but more ſhaggy. This covering enables the ſheep to ſupport the rigours of winter; but after they have loſt their wool, if the ſpring proves a wet one, they take care to ſew a piece of coarſe cloth round the ſtomach of the weakeſt, and thoſe that have leaſt wool.

A good ſheep, againſt which no exceptions can be made, muſt, according to their by-laws, at leaſt afford four pounds of wool, and it is not uncommon for them to produce more.

It is not unuſual for an ewe to have two lambs at a time, and ſometimes even three; they then take away one lamb from the mother, and give it to another who has loſt hers. When the lambs are too weak to follow the mother, they are kept at home and fed upon milk, which is done by means of a quill and a wet piece of ſkin.

The price of ſix ewes, from two to four years old, together with their lambs and wool, is four dollars in autumn, according to the land-tax: a wether of four years old is ſold for one dollar; but it is the cuſtom for a merchant to pay only five marks. If any body ſells a lamb ready killed, it is valued according to the quantity of fat which it has, at the rate of two marks for every pound. The fleſh alone, without the head, feet, entrails, fat, ſkin, and wool, is valued at twenty yards, and the bye-laws fix the price of a pound of dried mutton at half a yard. The ſkin is ſold by weight, after the rate of thirty fiſh for ten pounds.

They have goats in ſome places, but they are few in number; and, upon enquiry, I found the reaſon to be that they do not thrive in a country where there is no wood.

Beſides theſe animals they have three kinds of dogs in Iceland, *fiar hundar*, or *lumbar*, ſhag dogs; and *dyrhandar* and *dverghundar*; as alſo tame and wild cats, which laſt are called *urdarketter*; rats, white and brown foxes, ſome of which eat graſs, and are on that account called *gras tofur*. To root out theſe animals, the king has ſet a premium of a rix-dollar upon every ten fox ſkins that are ſold to a merchant. The natives have likewiſe made an agreement, that whoſoever deſtroys a fox's hole, together with the fox, the ſhe fox, and their young, is to receive one rix-dollar, which the neighbours collect among themſelves.

Rein-deers were not known here formerly; but by governor Thodal's order, thirteen heads were ſent from Norway in 1770, by M. Perenſon, merchant: ten of which died before they reached Iceland, for want of proper care; the three remaining ones thrive extremely well, and had calved three times before we came there: they do not want for food, as the country abounds with moſs.

After having treated of their fiſhery, and the breed of their cattle, I think this a very proper place to ſay ſomething of their birds, which, particularly in regard to thoſe of the aquatic kind, are very important to them.

They are found in great abundance every where on the coaſt; but the greateſt number by far are caught in the few places where they breed. The eggs the Icelanders make uſe of themſelves, as likewiſe of the fleſh, which is eaten by a great many of them; but with the feathers and down they carry on a very conſiderable trade.

It would be unneceſſary to mention all the different ſorts of birds, eſpecially as there is ſcarcely any country where ſo many kinds, and ſuch great numbers of them, are to be met with as in Iceland. Among the great abundance of geeſe, water-fowls, ducks, &c. &c. I will however ſay ſomething of the ſwan and the eider-bird.

It is known that the ſwan belongs to the claſs of birds of paſſage; their numbers increaſe very much towards winter, though there is no ſcarcity of them at any time, as

the greater part of the young breed conſtantly remain there. In ſpring we may often ſee an hundred of them in a flock, and frequently many more; and it is then thought that part of them advance yet further to the north, and makes but a very ſhort ſtay in Iceland. During ſummer they reſort to the lakes; but when winter approaches, and they begin to freeze, they remove to the ſea-ſhores. Their eggs are gathered in the beginning of ſpring, which are large, and ſaid to be very palatable. In Auguſt, when they loſe their feathers, they are hunted on the lakes, where they are to be found at that time, with dogs trained to catch them alive. They are ſaid to ſing very harmoniouſly in the cold dark winter nights; but though it was in the month of September when I was upon the iſland, I never once enjoyed the pleaſure of a ſingle ſong. An old ſwan has a fiſhy taſte, but the young ones are reckoned among the beſt eatable fowls.

The eider-bird is yet more uſeful to the natives, who conſider it as a kind of treaſure; and it is ſeldom heard that a prudent houſe-keeper ſhoots or kills any of them.

The eider-birds generally build their neſts on little iſlands not far from the ſhore, and ſometimes even near the dwellings of the natives, who treat them with ſo much kindneſs and circumſpection, as to make them quite tame. In the beginning of June they lay five or ſix eggs, and it is not unuſual to find from ten to ſixteen eggs in one neſt together, with two females, who agree remarkably well together. The whole time of laying continues ſix or ſeven weeks, and they are fond of laying three times in different places: in the two firſt, both the eggs and down are taken away, but in the laſt place this is ſeldom done. Thoſe to whom one of theſe places belong, viſit it at leaſt once a week.

When they come to the neſt, they firſt carefully remove the female, and then take away the ſuperfluous down and eggs, after which they replace the female on the remaining ones, when ſhe begins to lay afreſh, and covers her eggs with new down which ſhe has plucked from herſelf: when ſhe has no more down left, the male comes to her aſſiſtance, and covers the eggs with his down, which is white, and eaſily diſtinguiſhed from the female's; where it is left till the young ones are hatched, who in an hour afterwards quit the neſt together with the mother, when it is once more plundered.

The beſt down and the moſt eggs are got during the firſt of their laying; and it has in general been obſerved, that they lay the greateſt number of eggs in rainy weather. As long as the female ſits, the male is on the watch near the ſhore; but as ſoon as the young are hatched, he leaves them. But the mother remains with them a conſiderable time after; and it is curious to ſee how ſhe leads them out of the neſt as ſoon as they creep out of the eggs, and goes before them to the ſhore, whilſt they trip after her: when ſhe comes to the water-ſide, ſhe takes them on her back, and ſwims with them for the ſpace of a few yards, when ſhe dives, and the young ones, who are left floating on the water, are obliged to take care of themſelves. One ſeldom ſees theſe birds on land afterwards, for they generally live in the damp rocks in the ſea, and feed on inſects and ſea-weeds.

One female, during the whole time of laying, generally gives half a pound of down, which is however reduced to one half after it is cleanſed. The down is divided into *thang-duun* (ſea-weed down) and *gras-duun* (graſs down). The laſt ſort is thought to be the beſt, and is cleanſed in the following manner; ſome yarn is ſtreaked in a ſquare compartment round a hoop, on which the down is laid. A pointed piece of wood is then moved backwards and forwards on the lower ſide of the yarn thus ſtreaked, which cauſes the coarſer feathers to fall through, while the fine down remains on the yarn.

Down plucked from dead eider-birds is of little worth, becauſe it has then loſt the greateſt part of its elaſticity; for this reaſon it is of little value in Iceland. The other

ſort

ſort is ſold at forty-five fiſh a pound when cleanſed, and at ſixteen fiſh when not cleanſed. There are generally exported every year on the company's account one thouſand five hundred or two thouſand pounds of down cleanſed and not cleanſed, excluſive of what is privately exported by foreigners. In the year 1750, the Iceland company ſold as much in quantity of this article, as amounted to three thouſand ſeven hundred and forty-five banco-dollars, beſides what was ſent directly to Gluckſtadt.

Among the land birds that are eatable, ptarmigans are not to be forgotten, and are caught in great numbers. Falcons alſo abound in the iſland, of which there are three ſorts: they are purchaſed by the royal falconers, who give fifteen dollars a-piece for the white, ten for thoſe that are darker, and ſeven for the grey.

LETTER XIII.—TO CHEVALIER IHRE.

Of the Trade in Iceland.

Stockholm, Nov. 12, 1774.

THE Iceland trade has been ſubject to many revolutions. Till the year 1408 the Norwegians were almoſt the only nation who ſailed to Iceland, and bought all the fiſh the Icelanders did not conſume or export in their own ſhips. The Engliſh afterwards had this trade till the Reformation, when it fell into the hands of the Germans, and was peculiarly advantageous to the Hamburghers. But Chriſtian IV. who had the improvement of the whole Daniſh trade very much at heart, likewiſe directed his attention towards Iceland. He prohibited the trade of the Hans-towns thither in the year 1602, and beſtowed it on Copenhagen, Malmo, and ſome other towns at that time ſubject to the crown of Denmark.

The Iceland company at Copenhagen was, however, not eſtabliſhed till the year 1620, after the king had once more prohibited the trade of the Hans-towns to Iceland in 1619. This company continued till the year 1662, when it was ſuppreſſed by a ſpecial order. What contributed to this was the great damage done in Iceland by ſome pirates in 1627, who carried away great numbers of its inhabitants; the greater part of whom were, however, redeemed by the king nine years after. The king reſented this ſo much the more, as the Iceland company had not only undertaken to provide the country with all neceſſary articles, but likewiſe to protect it. This circumſtance produced a diſagreeable effect to the company, which was, that thoſe who had ſhares in the ſtocks of one thouſand dollars, only received five hundred; and thoſe who had ſhares of two hundred dollars, received not the leaſt conſideration. The company paid a certain ſum to the king for every haven, and two rix-dollars to the governor for every ſhip. It was likewiſe obliged to contribute ſomething to the king's magazines on the Weſtmann's Iſlands.

The trade of every haven was afterwards diſpoſed of to the higheſt bidder once in every ſix years; but ſince 1734 it has been in the poſſeſſion of a trading company, who have a grant of it, for which they pay a duty of ſix thouſand dollars a year to the king. They ſend from twenty-four to thirty ſhips thither every year, loaded with corn, bread, wine, iron, and wood, &c. &c. and they export in return from twenty-two havens, fiſh, fleſh, butter, blubber, ſkins, wool, and woollen manufactures, which they exchange againſt the merchandize they have brought thither according to a tax publiſhed in the year 1702. It is difficult to determine whether the company gains much by this trade or not; ſo much at leaſt is certain, that the Icelanders loſe by it; for the Dutch, diſregarding or evading the tax, import much better goods than the company.

For this reaſon the Icelanders ſell a conſiderable quantity of fiſh to them privately, though ſeveral Dutch ſhips have been confiſcated on account of carrying on a ſmuggling trade. The agents of the Iceland company are aware of this, by the ſmall ſtock that remains for their purchaſe, with which they are much diſſatisfied.

There is a market kept every year at Hraundals-retter, to which thoſe reſort who live up the country: they exchange butter, cloth, and ſheep, for fiſh, blubber, and other articles of that kind. At Reikavik there is a woollen manufactory, where ten or twenty workmen are employed: one likewiſe meets with a few looms here and there; and many more might be eſtabliſhed amongſt the peaſants, if encouragement was given them.

Daniſh money is current in the country, but the whole ſtock of ready money cannot amount to many thouſand dollars. Their accounts are not all kept in money, but according to yards and fiſhes: forty-eight fiſhes, each fiſh reckoned at two pounds, make one rix-dollar, and twenty-four yards make one likewiſe. You may buy a horſe for one hundred and fifty fiſh, and a farm for ſix thouſand yards. A *vatt* is one hundred pounds, and a *faering* ten. They reckon one hundred and ſixty-three quarts to a tun, and five to a *kuttur*. The Icelandic ell is as big as the Hamborough ell, three of which make a fathom.

LETTER XIV.—TO CHEVALIER IHRE.

Of the Icelandic Literature.

Stockholm, Dec. 4. 1774.

THE hiſtory of antient times ſhews us that our anceſtors did not deſpiſe arts and ſciences, though they peculiarly diſtinguiſhed themſelves by valour and heroic deeds. Their religion, mixed with fables, was, however reduced to ſome rule; and their ſyſtem of morality, though not the pureſt and beſt; yet inculcated certain virtues, which were in vain ſought for among the more enlightened Greeks and Romans. The long voyages they made without knowing the uſe of the compaſs, is a proof of their having been much better acquainted with aſtronomy and geography, than could have been expected. Phyſic, and particularly ſurgery, muſt have been held in high eſteem among ſo warlike a nation, though I queſtion very much whether any perſon could now ſubmit to the manner of curing an external hurt, ſuch as was practiſed among the ancients. Their invention exhibits itſelf in riddles, hiſtory, and poetry; and how highly theſe were valued among them, may be proved by many examples, of which I ſhall only mention Egil's poem, in praiſe of Erick Blodoxe king of Norway, by which he ſaved his life; and Hiarne's epitaph on king Frode, on account of which he is ſaid to have been made king of Denmark.

Though it cannot be entirely aſcertained, that Odin brought the Runic characters to the north; yet it is proved almoſt beyond a doubt, that they were known among us in the fifth and ſixth centuries. The art of writing was alſo known here, if not certain, at leaſt, as early as among the Franks and Germans; the former had no letters before they began to make uſe of the Latin ones in the ſixth century, and the latter were likewiſe unacquainted with them before the time of Charlemain.

Their taſte for riddles, ſtories, and poetry, the Icelanders alſo brought along with them from their native country, to the iſland where they are now ſettled; and whilſt theſe traces of ſcience diminiſhed in Norway, on account of the troubles which ſhook the whole north during ſeveral centuries, they not only preſerved themſelves in Iceland, which was not expoſed to ſo many diſturbances, but the care of their ſafety likewiſe excited the inhabitants to apply themſelves to the ſtudy of hiſtory, that they

might by it be informed of the deſigns of their powerful neighbours, and take the beſt and moſt neceſſary meaſures to oppoſe thoſe who only wiſhed for an opportunity of ſubjecting them to their yoke.

It is true they had no ſchools or public ſeminaries for the inſtruction of youth in the ſciences, before the introduction of the Chriſtian religion; but it was, however, not altogether neglected, for they took great pains, beſides inuring the bodies of their young men to feats of ſtrength and agility, and teaching them ſuch exerciſes as enabled them to defend themſelves and their countrymen, to inſtruct them alſo in hiſtory, religion, and law. Thence we find in their ancient chronicles frequent mention of perſons who had made conſiderable progreſs in theſe ſciences, and even before they received the Chriſtian religion there were a number in the country well verſed in the laws.

In their frequent voyages, before the uſe of the compaſs (*Leitarſtain*) was known to them, they diſcovered new countries, when driven out of their courſe, which were however deſerted almoſt as ſoon as diſcovered: however, ſome, if not all of them, have been diſcovered in later times.

Thus Bjorn Herjulfson, in a voyage he made to ſee his father in Greenland, was driven by a ſtrong north-wind upon a flat woody country, from whench he afterwards reached his father, after a long and troubleſome voyage, without thinking any more of his new diſcovery. After the death of his father, he again returned to Norway; where the account of his voyage raiſed an inclination in Leifer to go in ſearch of this country. He therefore ſet ſail with thirty-five men, and at firſt landed on a mountainous country covered with ſnow, without the leaſt appearance of verdure: from whence he continued his voyage, and came to another country which was flat and woody; this he named Markland. He ſet ſail again with a north-eaſt wind, and in two days time arrived at an iſland which lay north of the continent. He now entered weſtward into a ſtraight where his ſhip ſtruck on the ſand at low water; he then had it drawn aſhore with cables, and having built a houſe, remained there the whole winter: here they did not experience the leaſt cold, and the graſs only grew a little reddiſh in winter. The days were not of ſo unequal a length as in Iceland; and the ſun appeared above the horizon on the ſhorteſt day, both when they breakfaſted and at ſupper-time. The vine and wheat both grew wild, and this occaſioned their giving the name of Vineland to the country. This gives us room to conjecture that he advanced pretty far towards the ſouth of America. They afterwards carried on a trade with the natives of the country, whom they called Skralingar, for a long time, which, however, ceaſed at laſt, and the country, and even its name, are now totally forgotten.

Poetry formerly flouriſhed very much in Iceland; Egil Skalla Grimſon, Cormak Ogmundſon, Glum Gierſon, Thorleif, Jarlar Skald, Sighvatr, Thordſon, Gunlaug Ormſtunga, and Skad Ralfn, are celebrated as great poets. The art of writing was not, however, much in uſe till after the year 1000. It is true the Runic characters were known in the country before that period, and moſt probably brought thither from Norway. Though we have no reaſon to believe they were cut upon ſtones, as was practiſed among us (no Runic ſtones having been found there, whoſe age reaches to to the times of paganiſm); they uſed, however, to ſcratch them on bucklers, and ſometimes on their ceilings and walls: and the *Laxdaela Saga* makes mention of one Olof of Hiardarhult, who had a large houſe built, on the beams and rafters of which remarkable ſtories are ſaid to have been marked, in the ſame manner as Thorkil Hake cut an account of his own deeds on his bedſtead and chair. That Runic characters were made uſe of before the introduction of the Chriſtian religion, may be proved by

Olof

Olof Tryggwaſſon's Saga, where he makes mention of a man, whoſe name was Oddni, who, being dumb, made known, by means of Runic characters, that he had been inſulted by Ivar, his father's gueſt.

After the reception of the Chriſtian religion in the year 1000, the ſciences took another form. The Latin characters were immediately adopted; as the Runic alphabet, which only conſiſts of ſixteen letters, was found inſufficient. The firſt Icelandic biſhop Iſleif, founded a ſchool at Skallholt; and ſoon after they founded four other ſchools, in which the youth were inſtructed in the Latin tongue, divinity, and ſome parts of theoretic philoſophy. Jonas Ogmundſſon, firſt biſhop of Hoolum, ſent to Gothland in the year 1120 for one Giſle Finſon to ſuperintend the ſchool at Hoolum. Arngrim Jonſon, on this occaſion, mentions a remarkable circumſtance in his *Crymogaea*, p. 108. of the architect Thorodr, who, as he was employed in building the cathedral church at Hoolum, paid ſo much attention to the grammatical leſſons given to the ſchool-boys, as to make a conſiderable progreſs in them himſelf. The ſame author alſo mentions, that the biſhop, who was a learned and zealous man, having one day ſurprized one of the ſcholars in reading Ovid's letters, and book *De Arte Amandi*, was ſo incenſed thereat as to ſtrike the book out of his hand. At a time when no great knowledge of the Latin language could be expected even in Sweden, an Icelander however was found of ſufficient capacity and learning to inſtruct the young people to read and underſtand the Latin poets. But notwithſtanding the ſciences were there only in their infancy, thoſe who deſired to make greater progreſs in them, ſtudied in foreign univerſities. Giſlur Iſleifson ſtudied at Erfurt; and many reſorted to Paris, as Samundr Sigfuſſon did, from whence they were called *Pariſiklarkar* (Paris writers). Many, however, whoſe names are become celebrated, have only ſtudied in Iceland: as a proof of which, I will only mention the two moſt famous Icelandic writers Are Frode and Snorre Sturleſon. It may therefore be affirmed that Iceland, from the introduction of the Chriſtian religion there till the year 1264, when it became ſubject to Norway, was one of the few countries in Europe, and the only one in the north, where the ſciences were cultivated and held in eſteem. This period of time has alſo produced more learned men than at any other period ſince. We need only read their ancient chronicles, to be convinced that they had great knowledge in morality, philoſophy, natural hiſtory, and aſtronomy. They had tolerably clear ideas of divinity, and uſed to read the Fathers: but their poetical and hiſtorical productions, in particular, have bid defiance to time, even when ignorance was again beginning to reſume her empire. It would be an eaſy matter to mention a number of poets who diſtinguiſhed themſelves, not only in Iceland and the Orkneys, but likewiſe at the Swediſh, Daniſh, Norwegian, and Engliſh courts, as the *ſkaldartal* (or liſt of poets) contains no leſs than two hundred and forty: but it will be ſuperfluous to mention here any more than the three principal ones, viz. Snorre Sturleſon, who was beheaded in the year 1241, in the ſixty-third year of his age, at Reikholt in Iceland; Olafr Huitaſkald, who died in 1259; and Sturla Thordſon, who made his exit in 1284. Some extracts of the works of theſe authors are inſerted in ſome printed and manuſcript chronicles.

Of much greater importance are their ſayings or hiſtories, the utility and authenticity of which have cauſed ſo many diſputes: for if they have been conſidered by ſome as ſure and irreverſible ſupporters of the hiſtory of our forefathers, they have been looked upon by others as abſurd inventions and falſehoods, which belong to the ſame claſs as the hiſtory of the knight Finke, Fortunatus, the horned Siegfried, and other old women's tales. This laſt opinion is no leſs unreaſonable, than an exceſs of veneration paid to them would be inconſiderate and raſh. When they are conſulted with circumſpec-

tion and judgment, they are undoubtedly of great uſe, ſo much the more, as they are the only remaining monuments of the antient northern hiſtory; and indeed ſome of them are written with great judgment and perſpicuity.

The Aræ Frodes Schedæ were written ſince 1122, and are the moſt antient Icelandic accounts extant. The writings of Sturleſon, Gunlaug, Odde, and ſeveral others, are all of them works that will never be loſt or hurt by time; and I do not find any thing in them which ſhould induce us to deny them the ſame credit that we ſo implicitly give to the writings of Tacitus and Livy.

No one can doubt, that even thoſe authors in the compilation of their hiſtories, which have been conſidered as patterns of language, have made uſe of the information of other writers. Nor have our Icelandic hiſtorians been remiſs in this; for Sturleſon himſelf quotes Are Thiodolfr, the *langfedgatal*, or genealogical table, and ſome ancient ſongs in which their kings were celebrated; from which indeed he compiled his accounts.

The Icelanders were remarkably ſtudious in preſerving the memory of their anceſtors; and it was the moſt agreeable occupation in their meetings and aſſemblies, to repeat thoſe hiſtories and poems for which their great men had been renowned, as was the practice among the Greeks. Add to this, the contents and compoſition of the writings themſelves, which plainly prove, that the authors have not been inclined to relate marvellous ſtories; and it would be unjuſt to refuſe them that reliance on their veracity, which we without heſitation beſtow on other writers of the ſame claſs.

The greateſt part of their works were compoſed in the eleventh, twelfth, thirteenth, and fourteenth centuries; and ſome of them have even appeared in print. I have a liſt of theſe hiſtories in my poſſeſſion; and though they are by no means of the ſame degree of merit, it will perhaps not be diſagreeable to you to have a copy of it, as it is not only a proof of their love of ſcience, but likewiſe of their application.

As a freſh inſtance of their accuracy and aſſiduity in ſtudy, I muſt likewiſe mention their chronicles, in which they recorded whatever happened of importance both in Iceland and abroad. Theſe annals are in general conſidered as more authentic than their ſayings. Semundr and Are Frode were the firſt who introduced them, and they have ſince been continued down to our days. The following are conſidered as the beſt.

1. *Flateyar Annal*, which reaches to the year 1395, and of which
2. *Vatnsfiardar Annal* is a ſupplement which extends to 1660.
3. *Skallholt.*
4. *Hola.*
5. *Odda.*
6. *Biürns a Skardzaa* to 1645, of which
7. *Heſts Annal*, which goes down to the year 1718, is a ſupplement. *Hrafnagils Annal* begins where the laſt leaves off, and continues to 1754.
8. *Odds Ejrikſonar a ſitium* to 1680.
9. Annales Regii, which go to the year 1341.
10. *Hirdſtöra.*
11. *Laugmanna.*
12. *Biſkupa.*
13. Annales antiqui.
14. Annales vetuſtiores go to the concluſion of the thirteenth century. *Bjarne Halldorſon*'s annal, as I have been informed, begins about the middle of the ſeventh century, and reaches quite down to 1772.

But

But even here the ſciences have been ſubject to the ſame revolutions, which they have experienced every where elſe. The luſtre in which they had maintained themſelves ſo long, was ſucceeded by the moſt profound obſcurity. To give a clearer idea of this, I ſhall borrow the expreſſions of the learned biſhop of Skallholt, Dr. Finneus, on this occaſion, who compares the ſtate of the ſciences in Iceland to the four ſtages of human life, in his well-written Hiſt. Eccl. Iſlandiæ. Their infancy extended to the year 1056 when the introduction of the Chriſtian religion produced the firſt dawn of light. They were in their youth till 1110, when ſchools were firſt eſtabliſhed, and the education and inſtruction of youth began to be more attended to than before. Their manly age laſted till about the middle of the fourteenth century, when Iceland produced the greateſt number of learned men. Old age appeared towards the end of this ſame fourteenth century, when the ſciences gradually decreaſed, and were almoſt entirely extinct, no work of any merit appearing. Hiſtory now drooped her head, their poetry had no reliſh, and all other ſciences were enveloped in darkneſs. The ſchools began to decay, and in many places they had none at all. It was very uncommon for any one to underſtand Latin, and few prieſts could read their breviary and rituals fluently.

But this was not alone the caſe in Iceland, the greater part of Europe experienced the ſame change. For the dawn of a brighter day, which had begun to ſpread from Greece over Italy and the ſouthern part of Europe, after the taking of Conſtantinople by the Turks in 1453, had not yet penetrated to the north. Whatever bore the name of learning was not only deſpiſed; but ſo groſs was their ignorance, that men of the higheſt rank, both ſpiritual and temporal, were incapable of writing their names. We cannot wonder at this in Iceland, when the hiſtory of the church affords ſo many examples of biſhops who were preſent at councils, at the concluſion of which they cauſed to be written under the acts, *quoniam Dominus N. Epiſcopus ſcribere neſcit, ideo eju, loco ſubſcripſit N. N.* We were alſo informed, that the ignorance of this age was ſo great, that ſcarce any Swediſh king before Guſtavus I. knew how to write his name. In the annals of *Konungaoch Höfdinga ſtyrelſe* (ſuppoſed to be written by biſhop Brynolf Carliſon, who died at Skara in 1430) it is ſaid, no more ought to be required of a ſovereign, than to know how to read, underſtand, and explain his letters.

The reformation produced here, as in moſt places, a new dawn of knowledge. Some time before a printing preſs had been brought to Iceland, biſhop Giſſur propoſed to open a new ſchool in the convent of Videy, which had been ſeized by the crown; but as this had been deſigned for a dwelling-place to the king's receivers of the cuſtoms, Chriſtian III. commanded, in the year 1552, that a ſchool-houſe ſhould be built near each of the cathedral churches; that at Skallholt for forty ſcholars, and that at Hoolum for thirty-four; but they have ſince been reduced, the one to thirty-four, and the other to twenty-four ſcholars. Each of theſe ſchools was to be provided with a rector and an aſſiſtant teacher; and the king appropriated as much land to theſe foundations, as was ſufficient to afford tolerable ſalaries to the teachers, and board, books, and cloathing to the ſcholars gratis, ſo long as they remained at ſchool.

Great pains have ſince been taken to appoint men of known abilities as teachers to theſe ſchools; and young men are ſo well inſtructed there, that few of the clergy ſtudy any where elſe. Many Icelanders, however, ſtudy at Copenhagen; and in the year 1773, there were no leſs than fifty-four at that univerſity, where excellent regulations have been made for the ſupport of poor ſtudents. Some likewiſe ſtudy in foreign univerſities; and between 1760 and 1770 a native of Iceland, Paul Widalin by name, died at Leipſic, who was univerſally beloved and eſteemed there. A Mr. Thorolti, who

who has been above three years at Upſala, has likewiſe on all occaſions ſhewn himſelf a man of great merit.

We ſhould therefore form a very wrong judgment of Iceland, to imagine it abſorbed in total ignorance and obſcurity: on the contrary, I can affirm, that I have found more knowledge among the lower claſs, than is to be met with in moſt other places. You will ſeldom find a peaſant who, beſides being well-inſtructed in the principles of religion, is not alſo acquainted with the hiſtory of his country, which proceeds from the frequent reading of their traditional hiſtories (*ſagas*) wherein conſiſts their principal amuſement: nor is it uncommon to find perſons among them who can repeat the poems of Kolbein, Grimſon, Sigurd, Giſles, Gudmund, and Bergthors by heart, all of them poets who flouriſhed in later times; and among whom Vigfus Jonſſon has particularly diſtinguiſhed himſelf by his wit, though ſometimes at the expence of decency. The clergymen ſpeak Latin well; and I have found better libraries in many parts of Iceland than could have been expected.

A learned ſociety was erected here, which is ſpoken of in the preface of the above-mentioned Speculum Regale under the name of Societas inviſibilis; and I was intimately acquainted with the rector Halfdan Ejnarſon, and the late ſyſſelman Bjarne Haldorſon, who were both members of that ſociety, though I believe it does not exiſt at preſent. I could mention ſeveral whoſe learning and taſte did honour to their country, but I ſhall only name thoſe who have acquired moſt fame in the literary world.

Among theſe the biſhop of Skallholt, Dr. Finnur Jonſon, deſerves the firſt place; who, beſides many learned writings on the antiquities of Iceland, ſome of which have been publiſhed, has lately preſented the public with an eccleſiaſtical hiſtory, in three volumes quarto, replete with information, criticiſm, and erudition. I was happy in becoming more intimately acquainted with this worthy prelate, who has been biſhop ever ſince 1754, and found no leſs inſtruction than pleaſure in his company. You may eaſily conceive how much I wiſhed, at taking leave of him, that, that his advanced age would permit him to put a finiſhing ſtroke to his other works. We have ſome reaſon to hope for this at preſent, as one of his ſons, the learned Mr. John Finſſon, has lately been appointed his father's aſſiſtant and provoſt.

To this number alſo belong Halfdan Ejnarſon, rector of the ſchool of Hoolum, who has publiſhed the Speculum Regale, and is now employed in writing Hiſtoria Literaria Iſlandiæ. The provoſt and miniſter of Hiardarholt, Gunnar Paulſen, is juſtly celebrated on account of his great knowledge in ancient poetry. Bjarne Jonſon, rector of Skallholt, compoſes very good Latin verſes, and has a diſſertation of *Gandagar* ready for the preſs. Bjarne Paulſen, in company with Eggert Olofsen, made a journey through Iceland to collect manuſcripts and curioſities at the expence of the ſociety of ſciences. The lagman Soen Solveſen has publiſhed ſeveral law-works; as has likewiſe the vice-lagmen John Olſſon, and the provoſts Vigfus Jonſen and Gudlaug Thorgeirſon, beſides ſeveral others.

The profeſſor and counſellor of ſtate, Erichſen, who is not ſettled in Iceland, is likewiſe known on account of many diſſertations on antiquities, and is a uſeful member of the Collegii Magnæani. Arnas Magnäus, Torfeus, and ſeveral other Icelanders, have alſo particularly diſtinguiſhed themſelves for literature in this and the former century. I ſhall give a fuller account of them in another letter, wherein I propoſe to treat of the Icelandic antiquities in particular, where I ſhall alſo mention thoſe who have peculiarly diſtinguiſhed themſelves in that branch of literature.

The language in Iceland is the ſame as that formerly ſpoken in Sweden, Denmark, and Norway, and has preſerved itſelf ſo pure that any Icelander underſtands the moſt antient traditional hiſtory, as eaſily as we do letters written in the time of Charles IX.

The general change which took place in the northern language during and after the time of Erick of Pomerania did not extend to Iceland, though ſome trifling alterations were afterwards made in it in the fifteenth century, by the introduction of religion and their trade with the Danes, Engliſh, and Germans. Near the coaſts ſome Daniſh is underſtood, and ſome even ſpeak it; nor is it uncommon for a peaſant to ſay, *ſalve domine, bonus dies, bonus veſper, gratias, proficiat, dominus tecum, vale.* Notwithſtanding, I cannot agree with Sperling in conſidering the language as being more Daniſh than Icelandic, ſince not a ſingle word of Daniſh is underſtood in the interior parts of the country. The great pleaſure they find in reading their traditional hiſtories, has contributed not a little to preſerve the language in its purity.

You have yourſelf treated of its origin in the preface to your Swediſh-Gothic Dictionary; and one may form the beſt judgment of the language from Olof Tryggwaſſon's and ſome other hiſtorical traditions (Sagas) which have been written in the eleventh, twelvth, and thirteenth centuries, when it was in its greateſt purity. But as theſe works, are not in every perſon hands, I will here inſert a copy of the Lord's Prayer as a ſample, both as it was expreſſed and printed in 1585, and in 1746, which will clearly point out the ſmall change which the language has undergone during a ſpace of near two hundred years.

1585.

Fader vor thu ſem ert a himnum. Helgiſt nafn thitt. Tilkome thitt riike. Verde thinn vilie ſo a jordu ſem a himne. Gief oſs i dag vort dagligt braud. Og fyrerlat oſs vorar ſkullder, ſo em vier fyrerlautum vorum ſkulldunautum. Og inleid oſs ecki i freiſtne. Helldr frelſa thu oſs af illu, thuiat thitt er riikit, maattur og dyrd um allder allda. Amen.

1746.

Fader vor thu ſem ert a himnum, helgeſt thitt nafn, tilkomme thitt rike, verde thin vilie, ſo a jordu ſem a himne. Gief thu oſs i dag vort daglegt braud, og fyrer gief oſs vorar ſkullder, ſo ſem vier fyrergiefum vorum ſkulldunautum, og innleid oſs ecke i freiſtne, helldur frelſa thu oſs fra illu, thuiad thitt er riiked og maattur og dyrd um allder allda. Amen.

In regard to the pronunciation, they have four different dialects. Thoſe who dwell on the eaſt ſide of the country, drawl out their words in pronouncing them, which is not done in other places. On the weſtern ſide they have many words which are peculiar to that part of the iſland; and in Sneſialds Jokul the *aa* is pronounced as *ai*. In the ſouthern part of Iceland *o* is pronounced ſhort before *r* in certain words, as for example in *hvoriger, moraudt*, and others, though they are commonly long in other parts. In the northern part of Iceland the words are quite of different genders, as *skur*, which is uſually feminine, but there is maſculine; and *klara*, maſculine, which is there feminine. In South Iceland I have obſerved the following pronunciation.

A	is pronounced	au	in	tha
Aa	—	au	—	aara
Ll	—	dl	—	gamall
Au	—	ö	—	thau
U	—	ö	—	upp
Ae	—	ei	—	vaere
Ja	—	iau	—	hia
O	—	ou	—	moder
Gu	—	guö	—	Gud
Y	—	i	—	fyrer
Aef	—	aep	—	kiaefda

Their

Their alphabet conſiſts of the ſame letters as ours, except the (th), which character we have loſt, together with the pronunciation; the Engliſh have yet preſerved it, though foreigners find it difficult to pronounce.

We have an Icelandic grammar of Runolph Jonſon, printed in 4to. at Copenhagen in 1651: it was alſo printed in Hickeſii Elementa linguarum ſeptentrionalium, Oxford 1688, and again in his Theſaurus, Oxford 1703. But the manuſcript of Jonas Magnuſens's Grammatica Iſlandica, which you, Sir, poſſeſs, is more complete, and deſerves to be publiſhed, as likewiſe Eggert Olſen's Orthographia Iſlandica. The moſt ancient Icelandic dictionary we have is the Wormii Specimen Lexici Runici, compiled by Magnus Olafsen, which was publiſhed in folio, at Copenhagen, in 1650. Afterwards Gudmundi Andreae Lexicon Iſlandicum was publiſhed by Reſenius at Copenhagen, in quarto, in the year 1683. This was followed by Verelii Index linguæ vet. Scyto-Scandicae, which Rudbeck cauſed to be printed in folio, at Upſala, 1691, and by two Lexica Latina Iſlandica, both publiſhed in quarto at Copenhagen, the one in 1734, and the other in 1738; to theſe Rugman's Monoſyllaba Iſlandica Lat. Explicata, Upſala, 1676, in octavo, may be added. In the library at Upſala was a copy of a manuſcript Lexicon Iſl. Lat. which I have brought with me from Iceland. In the antiquity archives is likewiſe a very ample work of Gudmundr Olafsen, which has been augmented and reduced to order by Mr. Aſſeſſor Gagnerus, which will however moſt probably never be printed for want of a publiſher. It is to be lamented that Runolph Jonſon never was able to publiſh his Lexicon Iſlandicum, though a privilege was granted him for that purpoſe in May 1650: we may however ſoon expect to have ſomething more perfect on this ſubject, as the Collegium Magnaeanum in Copenhagen have promiſed to continue the important indexes, with which they have ſupplied the *Kriſtniſs* and *Gunlaug Ormſtunga* Sagas.

LETTER XV.—TO CHEVALIER IHRE.

Of Printing in Iceland.

Stockholm, Sept. 12, 1774.

I HAVE ſaid in my laſt letter that the art of printing was introduced in Iceland a ſhort time before the Reformation. But as many may be ſurpriſed that books were printed there ſo early, I ſhall endeavour to treat more at large in this of the different printing-offices in Iceland.

One of the moſt famous, but at the ſame time moſt illiterate and turbulent biſhops in Iceland, was John Areſon, biſhop of Hoolum. He made uſe of many arts, and particularly of his zeal for the Roman Catholic religion, to undermine the king's power, and hinder the progreſs of the reformation. His plots however ſucceeded ſo ill, that he was beheaded in 1550. As this man was extremely ignorant, and had not the leaſt knowledge of the Latin language, which was however made uſe of in letters of excommunication, and other ordinances, he commiſſioned a friend to procure him a perſon well verſed in Latin, who might at the ſame time eſtabliſh a printing-office. For this purpoſe John Mathieſſon, a native of Sweden, was recommended to him, and he arrived in Iceland between 1527 and 1530.

I cannot determine with certainty whether he was in orders at his arrival in Iceland; however I am inclined to believe it, from the appellation of Sira being given him after his arrival, which is a term applicable to the clergy. The biſhop immediately appointed him to the prebendary of Bridebolſtad and Veſturhopi, which ſituation he enjoyed till

his death in 1567, when at a very advanced age. Beſides ſeveral other children he left a ſon whoſe name was John, who was a printer there in the time of biſhop Guthrandr: he was ſucceeded in the printing-office by his ſon Brandur. John Bradtſon, ſon of the latter, died in an advanced age in 1681, as provoſt of Hytarnas. His ſon John Jonſon, a clergyman, died in the ſame place in 1732. This whole family is now reduced to poverty.

The printing-office was immediately eſtabliſhed; and in 1531 John Mathieſſon printed the firſt book in Iceland, which was the Breviarium Nidaroſienſe. There was likewiſe an edition of this book printed at Dronthiem, the editor of which was archbiſhop Erick Walkendorf, which is now very ſcarce. I do not remember to have ſeen this edition mentioned any where, except in the twenty-eighth number of the Daniſh Magazine, where a copy of it is ſaid to be in the library of Mr. Klevenfeldt. But in regard to the Icelandic edition, it is generally believed that not a ſingle copy of it remains, ſince the only one I ever heard of was in Arnas Magnaei's library, which was conſumed in the fire at Copenhagen in 1728.

Beſides the Breviarium Nidaroſienſe, he printed the *Handbok Præſta* (an eccleſiaſtical manual), Luther's Catechiſm, and other books of the ſame ſort. Printing however did not go on very well till 1574, when biſhop Guthrandr Thorlakſon ordered new types to be brought thither; whereupon, amongſt other books, the Icelandic bible appeared in print in folio, in the year 1584. The printing-office was at this period ſo well provided with types, that two preſſes were employed, excluſive of thoſe at Hoolum, where ſeveral books were printed and publiſhed about that time. The Icelandic code of laws was printed in 1578, at Nupufell, twelve miles from Hoolum, as likewiſe the Viti Theodori Summaria in 1589.

The printing-office at Hoolum was taken from Thord Thorlakſon in 1685, and transferred to Skallholt, where one-and-forty different books were printed: the firſt of which was Paradyſar Lykell, likewiſe Forfadra Bok in 1686; and the laſt, Boenabok Sira Thordar Bardarſonar Med Vika Saung Olearii. utl. af Sira Steines, in 1697. But in the beginning of this century, the printing-office was again removed to Hoolum, after biſhop Bjorn Thorleiſſon had bought it, together with the privileges granted to it, for five hundred dollars; and the firſt book publiſhed on the revival of printing at this place, was the Paraphraſis Medit. Dr. John Gerhardi, 1703. Since this time, ſome hiſtorical books, among which I will mention the Life of Guſtavus Landkrona, publiſhed at Hoolum, in 8vo. 1756, tranſlated from the Swediſh into the Icelandic language, have always been publiſhed here; the greateſt part of them however are religious books. A new privileged printing-office has likewiſe lately been eſtabliſhed at Hrappſey, by Olafr Olſſen, where ſeveral valuable books have already been printed.

A liſt of Icelandic books might perhaps not be improper in this place; but as I am unable to furniſh you with a complete one, I did not think it worth while to ſend you a catalogue of about three hundred that I am acquainted with; of which number, however, I am happy to have upwards of one hundred now in my library.

LETTER XVI.—TO CHEVALIER IHRE.

Of the Remains of Antiquity in Iceland.

DEAR SIR, Stockholm, December 21, 1774.

How infinitely happy ſhould I be, were I able to ſatisfy your curioſity in reſpect to the great number of remarkable and ancient monuments with which Iceland is ſuppoſed

to abound; but this is out of my power: all the information I can give you amounts to no more than that the country is ſo deſtitute of them, that it is in vain to go in ſearch of any antiquities deſerving the leaſt notice. There are however ſome ruins of an old caſtle near Videdal, which was formerly about two hundred perches in circumference: the remains on the north ſide are about twenty fathoms in height, though they are very low towards the ſouth. Near the parſonage Skaggeſtad, at Laugernas, are likewiſe ſome ruins of a leſſer caſtle, but it is not known by whom, or when it was built. In other places are remains of heathen temples, viz. at Midfiord, Godale, Vidvik, and others: at Hegranas is a kind of ancient place of execution; there are alſo ſeveral burying-places from the times of paganiſm, among which I ſhall only mention Thorleif Jarlaſkalds, ſituate on a ſmall iſland in the Oxaraa. Some old ſwords and helmets have likewiſe been found, but they have not cleared up any part of hiſtory. On the heaths of Thingmans and Threkyllis are two great ſtones ſtanding upright, which moſt probably have been erected as monuments to the memory of ſome deceaſed perſons, according to Odin's regulation. This cuſtom, which was long practiſed in the north, has from thence been brought to Iceland; though it was not uſual in Sweden till a long time after to put any inſcription on the monument. I have been told, that ſome years ago forty ſmall figures of braſs were found in the ground near Flatey, repreſenting animals and other objects; but unfortunately they fell into the hands of people who did not know their value, conſequently they have been all loſt.

There are no other monuments remaining of Sturleſon, beſides his writings, but a mount over-grown with graſs at Reikholt, which is ſaid to have been raiſed from the ruins of his houſe; *Stulunga Reitur*, the burying-place of his family; and at a little diſtance from them, *Snorra Laug*, one of the fineſt baths in Iceland. This bath, which is large enough to contain fifty perſons at one time, is mured in with a wall of baſalt, and concreto thermarum; it has a ſmooth level bottom, and is ſurrounded with benches. In Sturleſon's time a long covered paſſage led from thence to the dwelling-houſe, ſo that the bathers retire from the bath without being expoſed to the cold. The ſpring is at forty paces diſtance, and is called *Scribla*, and the water from it is conveyed to the bath through a conduit made of ſtones. At the end of this conduit is a hole in a rock, which is ſhut with a ſpigot and faucet, and through which you let in as much warm water as you think fit; this, when too hot, may eaſily be cooled by water from an adjoining brook.

Theſe are almoſt the only ancient monuments Iceland affords, and all, as you will readily allow, are of very little importance. There are no ancient manuſcripts, Icelandic ſagas, or hiſtorical traditions or accounts, to be met with, the iſland having been entirely ſtripped of them, owing to the zeal and induſtry of the antiquarians and others, who formerly reſorted in numbers to this country, for the ſole end of collecting them.

The honour of having firſt begun to collect them belongs to Sweden: the firſt who undertook it was Jonas Rugman, who went to Iceland in 1661, at the expence of the court of Sweden, where he obtained a number of manuſcripts, which laid the foundation for the collection of Icelandic original records, that are contained in the Swediſh archives of antiquities. Encouraged by his example, Thormundr Thorviſon likewiſe went to Iceland, furniſhed with an order from King Frederick III., of the twenty-ſeventh of May 1662, to the biſhops Bryniolf, Svenſſon, and Giſle Thorlakſon, to aſſiſt him in collecting Icelandic manuſcripts.

After the eſtabliſhment of the college, it was propoſed to ſend Peter Salan to Iceland; but this did not take place, though they gained their point ſome time after, in 1680, by means

means of Gudmundr Olfon, who prevailed upon his brother Helge Olfon to leave Iceland and come to Sweden, whither he brought a conſiderable number of manuſcripts Great additions were afterwards made to theſe collections by Arngrim Johnſon, Jonas Wigfuſen, Lopt Joſephen, Gudmund Gudmunderſon, and Thorvaldr Brockman, who were all employed as tranſlators by the college of antiquities. Jonas Eghardſen, Magnus Benedictſen, Iſleif Thorleiffen, Ejnar Ejnarſen, Arnas Hakanſen, Francis Jacobſen, and Thord Thorlakſon have alſo very much enriched the collection, both when the college of antiquities was at Upſala, and when it was afterwards transferred to Stockholm.

The attention of the Daniſh court was at laſt excited: King Chriſtian V., in 1685, diſpatched Thomas Bartholin to Iceland with an order to the bailiff Heidemann, to aſſiſt him in collecting Icelandic antiquities: he forbad at the ſame time, in the ſtricteſt manner, any manuſcripts, hiſtories, or other accounts relating to Iceland, to be ſold to foreigners, or carried out of the country.

Stockholm, as well as Copenhagen, became therefore poſſeſt of a conſiderable number of Icelandic writings; but the latter court not ſatisfied with what they had already obtained, diſpatched Arnas Magnäus and Paul Widalin to Iceland in 1712; where they ſought for whatever might remain there with ſuch extreme care, that it is almoſt impoſſible to get ſight of any manuſcript hiſtory in the whole country; and notwithſtanding the pains I have taken, I could only obtain an imperfect copy of the Sturlunga Saga, which I purchaſed.

It is in vain, therefore, that one now enquires for ancient Icelandic chronicles in Iceland; for beſides the fine collection in the Swediſh archives of antiquities, there is a very admirable collection of them in the library of the academy at Copenhagen, which was a gift of Arnas Magnäus; beſides ſeveral ſmall collections of leſs importance in the hands of private perſons.

I have already mentioned the Icelandic hiſtories which have been publiſhed: ſome of them have been printed in Iceland, among which thoſe printed at Skallholt are very rare; but the greateſt part have been publiſhed in Sweden, though ſometimes from very imperfect manuſcripts. Olof Rudbeck the elder, Verelius, the two Peringſkolds, Renhielm, Biorner, Salan, and Brokman, have however acquired a great deal of merit by the care and diligence which they beſtowed upon them. None of theſe editions however can be compared, in point of elegance and criticiſm, to thoſe publiſhed in Copenhagen, by the Magnäanian college, the continuation of which is expected with great impatience by the literary world.

LETTER XVII.—TO BARON AXEL LEJONHUFWUD.

Of the Icelandic Poetry.

Stockholm, Dec. 12, 1775.

It is with the utmoſt pleaſure that I prepare to obey your commands, in communicating to you a ſhort account of the Icelandic poetry; I only lament that my circumſcribed knowledge on a ſubject which is ſurrounded with ſo many obſcurities, will not permit me to make my account as perfect as I could wiſh, and as the importance of the ſubject requires; I regret this inability ſo much the more, as I am to ſubmit my thoughts to the eye of ſo great a connoiſſeur; but if even my obſervations ſhould not be very important, I willconſole myſelf for it, as they will, however, be a proof of my readineſs to comply with your wiſhes.

Though the opinion of ſome men of learning, that writing in verſe has been earlier practiſed in Europe than writing in proſe, may appear extraordinary at firſt, yet it

ſeems more probable upon nearer examination. The poets among the Greeks and Romans were more ancient than their hiſtorians and moſt celebrated orators. The time when proſe firſt began to be written among theſe nations, may be aſcertained with tolerable accuracy; but it is almoſt impoſſible to determine the age of poetry among them, as it is far more ancient than the ſiege of Troy and the Olympic games. In the ſame manner we know that the firſt work in proſe among the Romans was the ſpeech of Appius Caegius, to the ſenate and Roman people in the 124th Olympiad; in which he adviſes them to refuſe the conditions of peace offered by Pyrrhus, when it is certain that poetry had been known and cultivated among them long before.

This need not be wondered at, when we recollect that long before the knowledge of letters could have become general in Europe, many actions might, however, have been thought worthy to be conſigned to poſterity. How great an aſſiſtance muſt it have been to the memory, when the remembrance of an event, deſtined to be reſcued from oblivion, was preſerved in words compoſed according to a certain meaſure, where it might be determined, even by the ear alone, if any word had been omitted or altered. The laws of the ancient Germans were written in verſe, and the ſtanzas in which they were compoſed were generally ſung. The French monarch, induced by the favourable reception given to every poetical work, cauſed the Bible to be tranſlated into verſe in the ninth century: from the ſame motive Ottfried, a Benedictine monk in Alſace, tranſlated the four Evangeliſts into German verſe about the ſame period.

Thus we ſee that poetry is extremely ancient among all nations; and in Sweden it may be conſidered as a legacy of Odin, who firſt brought it thither. In ancient times there was no king or chief, or any other man of note, who had not his own ſkald or poet, who was obliged to be preſent on all important occaſions, to remark whatever was worthy of attention, and to relate it in ſongs. He was preſent at battles in the *Skoldborg*, or in the midſt of the braveſt warriors, that he might behold with his own eyes thoſe actions which were to be recorded: at their banquets he was obliged to animate the gueſts with happy inventions and poetical encomiums on their deceaſed heroes. Theſe poets were every where held in high eſteem; they were conſtantly admitted to the king's preſence, and frequently were both his generals and miniſters. They were called *ſkaldr*, which Chevalier Ihre derives from *ſkial*, reaſon or prudence, from whence the expreſſion of *ſkiálamán*, wiſe men. They were likewiſe called *ſpekingr*, from *ſpeke*, wiſdom, from whence the Engliſh word to ſpeak, derives its origin.

To the ſongs of theſe poets we owe the firſt accounts of the Swediſh hiſtory, and cannot therefore deprive them of the honour Tacitus beſtows on them in calling them antiquiſſimum annalium genus. Our ancient traditions are likewiſe filled with theſe ſongs, which we cannot alter or reject as worthleſs, though they are, for the moſt part, unintelligible to us. The cauſe of this is, firſt, that the ſkalds purpoſely compoſed their ſongs with ſo much art, that they were not only unintelligible to the vulgar, of which we find examples in Geila Sturſonar, Viga Glum, and Greltis's Sagas; but they were not even underſtood by the greateſt poets, of which Gretter's hiſtory gives us a proof.

They were, ſecondly, accuſtomed to tranſpoſe the order of the words in their ſongs in ſo ſtrange a manner, as neceſſarily augmented the obſcurity. I will only mention one example of this from Renhjelm, where the words, to follow in their natural order, ought to have been ranged according to the number placed over them:

Hilmir

1 2 8 9
Hilmir vann at holmi
5 7 6
Hialm-ſkoth rothni blothi
3 14 15 13
Huat ofduldu theſſ hoeldar
4 10 11 12
Hoerd oc 'auſtur i goerthom
18 20 17 19
Rogs bra Recka laegir
10 22 21
Riikur valkera lijki
23 24 27
Herſtefnir let hrofnum
25 26 28
Hold flaemingia goldit.

They had, thirdly, a particular poetical language (*Skaldſkaparmal*) which was very copious, but could not be made uſe of in common life. This language probably made one of the principal parts of their ſtudies in thoſe times, as they were not inſenſible of its beauty and elegance. Thus for example there are upwards of fifty ſynonymes of the word *bölja*, billow or wave. And Chevalier Ihre quotes Lopt Guttormſon's Lyodalykil (a love-ſong) in which there are many different appellations, which all expreſs the word woman. I ſhall borrow a few lines of this poem, which are mentioned in the Edda among the *kringaheiti*, and which prove how far theſe poets went in their Antonomaſias.

Heingi eg hamri kringdan
Hang a riupu tangar.
Grimnis ſylgs a galga
Gynnung bruar linna.

The natural diſpoſition of theſe words is this: *Eg heingi hamri kringdan linna gynnung a hang riupu bruar tangar, a Grymnis ſylgs galga;* which means, "I hang the round beaten gaping ſnake on the end of the bridge of the mountain bird, at the gallows of Odin's ſhield." To find the ſenſe of theſe words, Mr. Ihre obſerves, that by the gallows of Odin's ſhield is meant the arm, on which it is uſual to hang on the ſhield. By the word *ripa* is underſtood a falcon, for a ſkald has the permiſſion of putting one genus for another. The bridge of the falcon is the hand, on which the falconer places him, and its end or tong (tongue) is the finger. The gaping round beaten ſnake means a ring; and conſequently this long ſtory means no more than, I put a ring on my finger.

Fourthly, to make themſelves ſtill more intelligible, when two words had the ſame ſound, the Skalds were allowed the liberty of putting the periphraſis of the one for the other: for example, the word *hof* ſignifies a horſe's hoof or foot; but the ſame word likewiſe means decency, moderation, underſtanding; and to expreſs this the horſe's hoof was frequently made uſe of. But the principal difficulty in the explanation of this ancient poetry proceeds from the extreme incorrectneſs of the manuſcripts of our Sagas, particularly of the poetry, which cannot be read correctly without great attention. Theſe are the cauſes why the greater part of the verſes in their Sagas, publiſhed either

either in Iceland itſelf or in Sweden, cannot be underſtood; only very few are capable of comprehending them; that it is however poſſible, is proved by the new editions of Kriſtnis Saga, Landnamabok, and ſeveral others. The provoſt Gunnar Paulſen in Iceland is particularly diſtinguiſhed for his great knowledge in this branch of literature.

The difficulties we meet with in aſcertaining the true ſenſe of theſe ancient poems, is likewiſe the cauſe of the contempt with which we conſider theſe few remains of the genius of the ancients. I will readily acknowledge that they have no poem which could be propoſed as a pattern of wit and elegance; yet it cannot be denied, but that very ſublime thoughts and expreſſions, and ſometimes very beautiful compariſons, are to be met with in them: and it is impoſſible to read the dying Lodbrok's Biarkamal, Eigils, Hofud, Lauſn, and Ejvindrs, Haconarma, without pleaſure, beſides ſeveral others.

They choſe for the ſubject of their poetry whatever happened in common life; however they principally occupied themſelves in compoſing ſongs in praiſe of the actions of their great men; in which they are accuſed of not being over ſcrupulous in beſtowing their flatteries. We have ſeveral poems exiſting on various ſubjects, among which there is a tolerable epic one on Charles and Grim, beſides another on Hialmar. They have likewiſe ſome ſatirical pieces, which they uſed to call *nidviſor* and the undertaking of the author was named *yrkia nid;* but there are no traces of their having had the leaſt idea of theatrical performances.

From what has been ſaid, it may be imagined, that there is no language which allows a poet ſo much liberty as the Icelandic; and indeed there is no language ſo rich in poetical expreſſions as this: it muſt not however be thought that it is confined by certain rules; on the contrary, I believe there is no proſody ſo copious as the Icelandic, as, according to the Edda, they had no leſs than a hundred and thirty-ſix different ſorts of verſifications (in Icelandic *hattur*) each of which had its particular rules. However it will be extremely difficult, nay almoſt impoſſible, to ſay any thing certain on this ſubject, before we have a true explanation of that part which treats of it in the third volume of the Edda.

The Edda is one of the moſt celebrated remains of antiquity, and yet it has hitherto been very imperfectly known. It has generally been conſidered as the mythology of the ancients, and the *Voluſpa* and *Havamal* have been forced upon it, as two of its volumes, though they do not in the leaſt belong to it. But Chevalier Ihre has thrown more light on this affair: in his printed letter to Mr. Lagerbring, he has attentively examined the manuſcript of the Edda, in the library at Upſala, and clearly proves that it is nothing more than an introduction to Icelandic poetry, conſiſting of three parts: the firſt, *daemiſagor*, is an extract from the Hiſtoria mythica veterum: the ſecond, *kenningar*, is a mere Ærarium poeticum; and the third, *liods greiner*, contains the Icelandic proſody, &c. &c. The ſo-called *dæmiſagorne*, are for the moſt part tranſlated into the Swediſh language by Goranſon, but the tranſlation is very incorrect. Reſenius has likewiſe publiſhed them, together with the *Kenningarne* in Latin. But the third part, which deſerves no leſs attention, has not yet appeared in print; and it is much to be wiſhed that Chevalier Ihre would give it to the public, as there are ſo few beſides himſelf capable of doing it juſtice.

The various conjectures which have been formed concerning the true author of the Edda, have been no leſs erroneous than thoſe relating to the ſubject of the book itſelf. It has generally been thought that Samundr Sigfuſon, who died in 1133, wrote a very ample work, entitled the Edda, which treated of many important ſubjects, and was in a manner a magazine of all human knowledge; of which however ſcarce one third

has ever been preſerved, and tranſmitted to us in the preſent Edda. But Chevalier Ihre aſſerts, that the Edda we now are in poſſeſſion of, has not been extracted from any one more ancient, but that it has originally been compoſed by Snorre Sturleſon.

The difficulties and objections which have been made againſt this opinion by the learned Arnas Magnäus, and afterwards by profeſſor Schloſern, can eaſily be removed; for moſt probably Sturleſon's Edda has been continued by the monk Gunlaug, as Bjorn of Skardſaa ſuppoſes, or rather by Olafr Hvitaſkald. It is not therefore ſurpriſing, that ſomething in praiſe of Sturleſon ſhould be inſerted; and it may eaſily be explained from hence, why the author called Waldemar king of Denmark, his maſter.

It is difficult to determine the true nature of the ancient Icelandic poetry; however to give you ſome idea of it, I will ſay ſomething of the verſification moſt frequently uſed among them, and which was called *drottquade* (king's ſong).

It was divided into ſtanzas, each of which conſiſted of four couplets, and each of theſe couplets was again compoſed of two hemiſticks, of which every one contained ſix ſyllables: and it was not allowed to augment this number, except in caſes of the greateſt neceſſity. Theſe hemiſticks conſiſt of three or four feet, according to the different ſorts of verſification, and ſometimes of more, in proportion to the ſhortneſs of the ſyllables. Beſides this, the Icelandic poetry requires two other things, viz. words with the ſame initial letters, and words of the ſame ſound. This aſſonance is called *hending*, and is either more or leſs; in the firſt caſe it is called *adalhending*, and in the ſecond, *ſkotthending*. This you may clearly ſee by the following example:

Auſtur londum for undann
Alvaldur ſa er gaf ſcaldum,
Hann feck gagn at gunne,
Gunntrör da ſlög mërgum,
Slydurtungur let ſlingra
Sverd leiks reigenn ferdar,
Sende grammur ad grundu
Gullwarprthi ſnarpann.

Here it muſt firſt be obſerved, that there is in every couplet a ſyllable which governs the whole verſe, *rader quaedinni*, which is almoſt always the firſt word in the ſecond hemiſtich; and two words in the firſt hemiſtich muſt begin with the ſame letter, if it is a conſonant; but when it is a vowel, one vowel may be put for another. Thus, for example, in the above ſtanza the following words are thoſe which govern each verſe, conſiſting of two lines or hemiſtichs, *radar quedandi*, in the firſt verſe, the word *alvadur*, becauſe it begins with a vowel, has, in the firſt hemiſtich of this verſe, the words *auſtur* and *undann*; in the ſecond verſe *gunhörda*, you find *gagn* and *gunne* in its firſt half; in the third verſe *ſverd*, whence in the firſt hemiſtich *ſlydurtungur* and *ſlingra*; in the fourth verſe, *gullvarpathi*, which requires *gramur* and *grundu* in its firſt half. Secondly, one finds in the firſt hemiſtich of each verſe a *ſkotthending*, or two words, which have equal conſonants with unequal vowels, ſuch as are in the firſt verſe *löndum*, *undann*; in the ſecond *hann*, *gunn*; in the third, *ſlydurtungur*, *ſlingra*; and in the fourth, *ſcende*, *grundu*. But in the ſecond hemiſtich of each verſe is an *adalhending*, where two words have both equal conſonants and vowels, in the above-mentioned ſtanza: words of this kind are in the firſt verſe *alvald ſkaldumm*; in the ſecond verſe *gunhörda*, *mörgum*; in the third verſe *ſverd*, *ferdar*; and in the fourth verſe *gulvarpathi*, *ſnarpann*; conſequently in a ſtanza, which, like the above, conſiſts of thirty words, above one half

of

of its peculiar properties are contained in the impoſſibility of changing one word for another, or tranſpoſing it, without making a great alteration in the whole verſe. Theſe aſſonances, or *hendingars*, are generally found in the firſt and laſt word of each line: ſometimes however the one aſſonant word is placed in the middle of the line, as in the inſtance of the word *löndum* in the firſt hemiſtich of the firſt verſe.

This conſonance of ſounds muſt be conſidered as the neceſſary ornament of a regular verſe by the ancient Skalds: the greater this uniformity is, the more the verſe approaches to perfection; it likewiſe ſerves them as a guide in ſinging their verſes. We alſo find ſomething of this ſort in the Latin poets: Virgil ſays,

—tales caſus Caſſandra canebat.

And another poet,

Dum dubitat natura marem faceretve puellam,
Nates es o pulcher paene puella puer.

This has likewiſe been remarked by Boxhorn, who at the ſame time quotes from Giraldus Cambrenſis, that this was alſo cuſtomary among the ancient Cambrians, and in England: ſo that it ſeems to have been the opinion of moſt nations, that the elegance of poetry required this harmony of ſounds. For this reaſon the Cambrians ſay,

Digawn Duw da y unie
Wrth bob ctybwylh parawd.

And the Engliſh,
God is together gamman and wiſdome.

David Rhaeſus confirms this in his Grammatica Cambro-Brytannica, printed in folio, London 1592, and quotes ſeveral paſſages from their verſes, which have a great deal of reſemblance with the *hendingar* of the Icelanders.

I know not whether the agreement of the initial letters, cuſtomary in the poetry of the Findlanders, might not likewiſe be mentioned here, as a proof of the ſame cuſtom being obſerved there as in Iceland: I will therefore inſert a paſſage from Calamnii's Congratulation to the late king Adolphus Frederic, on his undertaking a voyage to Finland.

Koſta kulki kuningamme
Adolph Fredric armollinen
Meidan maalla matkuſteli,
Kaicki vereni venahti,
Kaicki lükahti lihani,
Eltae virteni viritin,
Kannoin minum kandeleni,
Iſaen iſtuimen etehen,
Kaicki vallan kamarihin:
Ioſta anvin andimia.

But this carries me too far from my ſubject. Though we do not find any rhymes in our moſt ancient poetry, it may however, be ſaid with certainty that they are older than the introduction of the Chriſtian religion. Skule Ejnarſon is therefore wrongfully accuſed

of having introduced the uſe of rhymes, which is now become ſo general, that except England, which has preſerved its blank verſe, no nation in Europe is pleaſed with verſes that do not rhyme. The art of rhyming, which is by no meane eſſential to poetry, and ſtill leſs uſeful, as it only ſerves to make it more difficult, was borrowed, it is not improbable, from the ancient northern ſkalds, and has now ſpread itſelf beyond Europe; ſo that rhyming is become as univerſal as the complaint, that the number of verſifiers increaſes in the ſame proportion as the number of poets decreaſes. Baretti relates, that he heard a Moſambique ſong in rhyme, from ſome negroes at Madrid. Gages ſays the ſame of the Mexicans; and Nixbuhr mentions that the Arabs are great rhymers.

To conclude, I here preſent you with a ſpecimen of an Icelandic poem which Rugman compoſed on the death of count Magnus de la Gardia. It was printed at Upſala; but is become ſo ſcarce, that I doubt whether any perſon in Sweden has a printed copy of it: it may at the ſame time ſerve to ſhew the nature of a *drottquade*, as the author has obſerved almoſt all the rules which conſtitute one.

Aut er i ſeggia ſöti
Saknar manns i ranni
Gret ylgur Ragnvald rytto
Rom-ſtamir haukar fromaſt
Kund Lodbrokar; kiendo
Kuillinda valir illra:
Kuóldrido klarar hreldoſt
Kueid ari már faſt reidar
Tijd fiello tar af giodi
Tafnlauſir æpto hrafnar.

Thuarr og vid theingils dauda
Thydur morg brád, i hijdi
Skreidaſt thui berſi ſkiædur
Skiott marti gráds, of otta:
Ox ódum falu faxa
Frar miog or leiptri tara
Huarma beckur ad hrockin
Hraut gron a baudar nauti.

Greto ſkinlaus agiætann
Gripdijr heidingia ſuipuls
Verdar of fædo fordum
Fleinthings allvakran kingia:
Og i oglodum huga
Undo ſier menn og hrundir
Seims kuado mundar ſoma
Sieirrhuor huit malar thuerri.

Heidingiar ef ſua hedins
Harmadu kuanar barma
Stälir ſier giordi ſtala
Stijrir og Eida hiruſt:
Thars i malmguſti giera
Grad thuarr og vod til brada
Varga kna vund oborgid
Vas, thaut rafn i aſi.

Hvad bæri oſs er erum
Urdarbrunns tha alkunnir
Sira Jofurs theſs ſara
Sueita dagliga neitum?
Og i hans erum faugru
Orda vidkuædi vordnir
Uppfræddir ad vier hreppa
Aſtundum gledi háá?

Bæri oſs ey bliugum vera
Breiſkleika holdſins veikan
Tijitt fyri ſionir ſettia
Synd flya, dygd i nijaſt?
Hel med thui hroka ſtoli
Hreikir ſier a faul bleikum
Akuedr ymſra thioda
Andlat med quiſti handar.

Hel vægir hauldum eigi
Hrijfur or theſſo lijfi
Kejſara, Klerk og Räſir
Karlmenſko fulla Jarla:
Altignum amint fagnar
Og kot-af-röpa throti
Kurteiſa kappa herſa
Kielling leggur ad velli.

Dæmi framm daglig koma
Drijir hel verk at nijo
Audlinga aburt leidir
Oſs dauggvar tara foſſi:
Mannlunga mætſta fangar
Med ſier hertekna hiedan
Færir og furdum ſtorum
Fiaurleſtir meingid beſta.

Sidpridi, fæmd og heidur,
Somligigur dygdar blomi,
Mangiæſka, vinſæl minning,
Metrda fremd ofgietin,
Frijdleikur, fegurd, audur,
Frækn, aſt, og hyller dáſto
Hel med ſier dregur i duala
Deyr tho gott mannord eije.

Einn nu af æfi banni
Afgieck raud moens brecku
Mætur altygin ytum
Æ tregandi lægir:
Kurreis, vis, kiænn, til vurta
Kin-ſtor lof dunga vinur
Haborin Jarl og Herra
Haukſtandar malar grandi.

Dyr

Dyr Magnus Delagardi
Dygdhár Odains bygde
Akurs viſt af var rekin,
Er nara nift illſkiptin:
Mord hauxa fall hans færdi
Fridoſtum brecko hlijda
Sorg ſtora ſua og morgum
Slædir lax hrundum fædo.

Thar fie oſs tho ad eyrir
Thad hann i gudi gladur
Als træd holds goto greida
Grand fyrtiſt vondra anda;
Hirdur i Gimlis gardi
Glatt ſingur og ſamklingir
Utvauldum Eingla ſueitum
Endalauſt lof miuk rauſto.

EPITAPHIUM.

Conditur hoc tumulo juvenili mortuus ævo
Magnus, de Magna Gardia gente ſatus.
In multos canus dignus qui viveret annos,
Hei mihi! quod juvenis concidit ante diem.
Hujus enim ingenium cepit non terra. Quid inde?
Tollite Cælicolæ, reddite Cælicolæ.
Dic tumulum ſpectans oculo properante viator:
Magno Tuo Cineri ſit pia terra levis.

JONAS RUGMAN.

Scripſit Upſaliae anno 1667,
die 14 Februarii.

LETTER XVIII.—TO PROFESSOR BERGMAN.

Of the Volcanos in Iceland.

Stockholm, Sept. 1, 1773.

HAVING received the collection I made in Iceland of the ſpecimens of the different ſubſtances of which their volcanos are compoſed, I take the liberty of ſending it to you; adding at the ſame time a ſhort account of theſe burning mountains, which is in part extracted from Icelandic writers, and partly founded on what I heard from the natives, as well as from my own obſervations; and which I do not think unworthy of your cloſer examination. Indeed it is much to be lamented, that ſince of late ſuch care and application have been beſtowed on the ſtudy of natural hiſtory, ſo little attention has been paid to the operations of Nature in this remarkable iſland; for hitherto a very ſmall number of the many volcanos are yet fully known; but that we ſhould be more ignorant in regard to the wonderful hot ſpouting water-ſprings with which the country abounds, is very extraordinary; not to mention many other uncommon appearances in nature.

My time and attention have been too much confined and taken up to give you ſo complete an account of the curioſities of Iceland as they deſerve; but I flatter myſelf notwithſtanding, that you will give a favourable reception to the few obſervations I ſhall make, though they ſhould not be ſo important as might be expected. We may hope

to ſee this ſubject treated upon more at large, when you have time and opportunity to compare the effects of fire in Iceland, with ſimilar ones in other parts of the world.

I will not venture to determine how far the opinion of ſome men of learning is founded on truth, that all mountains have taken their riſe either from fire or water. How probable ſoever this opinion may appear, of which we can find no traces in the moſt remote times, and the moſt ancient authors; yet it would be very difficult, nay almoſt impoſſible, to eſtabliſh it by experience: but be this as it may, I will venture to pronounce, that Iceland has been formed by eruptions of fire.

It is no uncommon event for iſlands to be produced in this manner; we have many examples of it; but the ſize and extent of Iceland, in compariſon to other iſlands, which owe their origin to the ſame cauſe, may raiſe ſome doubts againſt the reception of this hypotheſis. Nor can it be denied, that this, as well as ſeveral ſorts of ſtone which are to be found there, and which do not bear any diſtinct marks of the effects of fire, are likewiſe calculated to confirm theſe doubts. Again, I ſee nothing to hinder me from conſidering Iceland as produced by fire, when I reflect that the ground in all parts of the iſland, and particularly near the ſea-ſhore, conſiſts of *lava* or *tuffa*, which is frequently covered with other ſorts of ſtones, as at Lundö, and even with a hard kind of moor-ſtone (*ſaxum*), or with ſeveral ſtrata of different kinds of earth and ſtones, as at Laugarnœs, where the lava is fourteen feet in depth; when I find beſides, that thoſe rocks which have no traces of fire are compounded of ſand mixed with ſmall pieces of ſpar, which may eaſily be produced, in two or three thouſand years, ſince the lava has laid the foundation; I am ſtill more inclined to ſupport this opinion.

I am not however ſo credulous as to believe, that the whole iſland was produced at once by fire; but I rather conjecture that it has been the work of ſome centuries, by ſeveral cliffs and rocks having been produced at different times, whoſe points have been connected by new eruptions, and which have formed the baſis of the whole iſland.

It is very difficult to determine, whether this ſuppoſition has any real foundation or not; however I think myſelf authorized to believe it, as well from the arched figure into which the ſtreams of lava have generally formed themſelves, as from the probable connections of the ſea and the volcanos there: I likewiſe believe, that from hence it may beſt be explained, why ſeveral iſlands have been ſwallowed up in great earthquakes, as a building may ſooneſt be deſtroyed by tearing away the pillars on which it reſts.

Thus I go further back with regard to the eruptions of fire in Iceland, than the common tradition among the vulgar people there, who believe that the firſt inhabitants of the country, whom they ſuppoſe to have been Chriſtians and Iriſhmen, were ſo much oppreſſed by the Norwegian coloniſts, that they were forced to leave the country, which they firſt ſet fire to, to revenge themſelves. We cannot however determine, till after the arrival of the Norwegians, how often the eruptions of fire have happened. But this nation has preſerved with great care whatever concerned their place of reſidence or habitation.

The firſt eruption of fire, mentioned by the antient records, is the *Ildborgar braun*, immediately after the arrival of the Norwegians on the weſt ſide of the iſland, in the ninth century. But it is not remarked as any thing extraordinary, only that the fire broke out near a farm belonging to Thore; and a ſtretch of lava, or a *braun*, of three miles in length, and two and a half in breadth, remains to this day as a monument of it. After this there are no eruptions mentioned till the year 1000, when the Chriſtian religion was introduced there. At a time when the chiefs of the country were aſſembled, to conſult about the reception of the Chriſtian religion, information was brought

that

that fire was thrown out at Plow. The heathens conſidered this as a proof of the wrath of their gods, on which account they were reſolved to refuſe the new religion; but this reſolution was over-ruled by Snorre Gode's aſking them, "On whom did the gods diſplay their wrath, when thoſe rocks on which we now ſtand were on fire?"

The Icelandic chronicles mention many inſtances of fiery eruptions obſerved in different places during the ſpace of eight hundred years *; it is therefore difficult to conceive how Horrebow, who has been in the country himſelf, could affirm, that fire is emitted only from them very rarely, and in few places.

To be ſenſible of the dreadful effects of fire, the country itſelf need only be conſidered. The mountains are almoſt entirely compoſed of lava and *tuffa*, and the plains are cruſted over with *braun*, or tracts of lava, which are, however, in many places covered with earth or turf. The accounts which we have of certain eruptions of fire, alſo informs us, that they have always laid waſte large tracts of land, either more or leſs.

I will not in this place mention the damages done to the inhabitants by the aſhes thrown from the volcanos, which frequently covered the fields for a ſpace of twenty or thirty miles in length, and half a yard in height, and by which the cattle ſuffered very much, as it cauſed them to loſe their teeth, and frequently to drop down dead for want of food; and when they have been killed, pummice has ſometimes been found in their liver and bowels. I will only name ſome of the places ſituate neareſt to the volcanos, that have been utterly deſtroyed by their effects. This has been partly done by violent earthquakes, which generally preceded the eruption; and partly by inundations of water from the ice melted by the fire; and laſtly, by the quantity of glowing aſhes and ſtones thrown from the mouths of the volcanos, and the ſtreams of burning matter which flowed down on all ſides.

In 1311 eleven farms were conſumed near Roidekamb, and as many more near Tolledyngr; and in 1366, 70 at Lillehered. Heckla deſtroyed two in 1374; ſeven in 1390; and eighteen in one day in 1436. In the ſame manner five farms were laid waſte near Myrdals Jokul in 1660, and ſtill more in 1693 near Heckla. In 1727, at leaſt ſix hundred ſheep and one hundred and fifty horſes were killed near Myrdals Jokul, by the flood and the pieces of ice which ruſhed down with it. In 1728, many farms were deſtroyed near Krafle, and a large lake called Myvatn, was entirely dried up, into which the ſtreams of fire that rolled from the mountains, flowed during ſome years, and formed a tract of lava of four miles in length, and one and a half in breadth. In 1755 Kattlegiaa laid waſte ſix pariſhes; and in the ſame year the laſt eruption of Heckla ravaged a tract many miles to the north-eaſt.

It is not therefore to be doubted, but that the fire rages here with as much, and perhaps more violence than Veſuvius, Ætna, and other volcanos; notwithſtanding which, I ſee no foundation for the opinion of ſome people, who affirm that there is a communication between the volcanos of Iceland and Italy; it might be maintained with as much foundation that Kattlegiaa and Teneriff, or Krafle and Lima, communicate.

But before I quit this ſubject I will mention a circumſtance which is related both by Egbert Olafsen and Jacobſen. The laſt time that Kattlegiaa emitted fire, a flaſh of lightning, as it were, burſt from the flame, and pierced through the cliffs which intercepted its way. The ſame lightning in one place killed eleven horſes, three of which were in a ſtable; a farmer was alſo killed by it near the door of his room; his upper cloaths,

* The chronicles give a liſt of ſixty-three eruptions at Heckla and other places, from the year 1000 to 1766; of which twenty-three were eruptions of mount Heckla only.

which

which were woollen, remained entirely unhurt, but his ſhirt and waiſtcoat, which were both of linen, were burnt; and when his cloaths were pulled off, it was found that the fleſh and ſkin on the right ſide were conſumed to the very bones. The maid-ſervant, who wanted to aſſiſt him in ſaving the cattle, was likewiſe ſtruck by the lightning, but did not die till ſeveral days after, during which time ſhe ſuffered inexpreſſible torture. It is likewiſe ſaid, that when ſhe put on her cloaths, they were ſinged by the glutinous fires, which cleaved to her body. At firſt I heſitated to believe this as true; but when I read in your Coſmography that Braccini had obſerved, in 1631, that a column of ſmoke from Veſuvius extended over ſeveral miles of the country, from which deadly lightning proceeded; and that the ſame happened in 1767, when the iron rods erected in Naples became electric whenever Veſuvius emitted fire, I am the more inclined to believe that there is ſomething electrical in this kind of fire, as the ſame phænomena appear in thunder and lightning.

LETTER XIX.—TO PROFESSOR BERGMAN.

Of the Volcanos in Iceland.

Stockholm, September 21, 1774.

It ſcarcely ever happens that the mountains begin to throw out fire unexpectedly; for beſides a loud rumbling noiſe, which is heard at a conſiderable diſtance, and for ſeveral days preceding any eruption, and a roaring and cracking in the part from whence the fire is going to burſt forth, many fiery meteors are obſerved, but unattended in general with any violent concuſſion of the earth; though ſometimes earthquakes, of which the hiſtory of the country affords ſeveral inſtances, have accompanied theſe dreadful conflagrations.

Among the traces left by theſe eruptions, are particularly the clefts which are frequently to be met with, the largeſt of which is Almennegiaa, near the water of Tingalla; it is very long, and one hundred and five feet in breadth. The direction of the chaſm itſelf is from north to ſouth: its weſtern wall, from which the other has been perpendicularly divided, is one hundred and ſeven feet ſix inches in height, and conſiſts of many ſtratas (each of which is about ten inches in height) of lava, grown cold at different times, as may eaſily be diſcovered by the apparent cruſt, which is full of bliſters, of a darker brown, and not ſo much compreſſed as the remaining part of the maſs of lava. The eaſtern wall is only forty-five feet four inches in height; and that part of it which is directly oppoſite to the higheſt part on the other ſide, is no more than thirty-ſix feet five inches high.

It is likewiſe conſidered as a ſign of an impending eruption, when ſmall lakes, rivulets, and ſtreams dry up. Some perſons believe that it does not contribute a little to haſten the eruption, when the mountain is ſo covered with ice, that the holes are ſtopped up through which the exhalations, &c. often found a free paſſage.

Though it is by no means my opinion that this contributes much to it, it cannot be denied, that the fire is generally contained in theſe mountains covered with ice, or, as they are called in the country, *jokuls*.

The firſt thing that is uſually obſerved, before a new eruption of fire, is the burſting of the maſs of ice with a dreadful noiſe, whence it is called in Icelandic *Jökla-hliod* (Jokul's Sound) and *Jokla breſtar*.

Flames then burſt forth, and lightning and balls of fire iſſue with the ſmoke, which are ſeen ſeveral miles off. With the flames proceed a number of larger and ſmaller

ſtones, which are ſometimes thrown to an incredible diſtance. I have ſeen a round ſtone near Nafeirholt, about a mile from Heckla, which was an ell in diameter, and had been thrown there in the laſt eruption of Heckla. Egbert Olafsen alſo relates, that at the laſt eruption of Kattlegiaa, a ſtone which weighed two hundred and ninety pounds was thrown to the diſtance of four miles.

A quantity of white pumice-ſtone is alſo thrown up with the boiling waters; and it is believed, with great probability, that the latter proceeds from the ſea, as a quantity of ſalt ſufficient to load ſeveral horſes has frequently been found after the mountain has diſcontinued burning.

Then follows generally brown or black pumice-ſtone, and lava, with ſand and aſhes.

The lava is ſeldom found near the opening, but rather *tuffa*, or looſe aſhes and grit; and indeed the greater part of the Icelandic mountains conſiſts of this matter, which, when it is grown cold, generally takes an arched form, ſome admirable proofs of which may be ſeen in the cleft at Allmanagiaa: the upper cruſt frequently grows hard and ſolid, whilſt the melted matter beneath it continues liquid; this forms great cavities, whoſe walls, bed, and roof are of lava, and where great quantities of ſtalactite of lava are found.

There are a great number of theſe caves in Iceland, ſome of which are very large, and are made uſe of by the inhabitants for ſheltering their cattle. I will here only take notice of the cave of Surtheller, as the largeſt of all: it is between thirty-four and thirty-ſix feet in height; its breadth is from fifty to fifty-four feet, and it is five thouſand and thirty-four feet long.

It would be both tedious and difficult to claſs the different compoſitions of fire in theſe places, as it is not eaſily diſcovered to which they belong: for example, jaſper, of which great quantities of red and black are found incloſed in the lava, and mixed with it; I will therefore only name thoſe which have been evidently produced by the fire. Firſt, *tuffa*, a ſtone, ferruminated aſhes and grit, which ſometimes is found mixed with lava, baſalt, and other ſorts of ſtones, and having been moiſtened by the ſpouting of water, grows hard by heat and length of time. Secondly, *lava*, is that kind of ſtone which has been melted by the violence of the fire, and varies according to the difference of the ſtate in which it ſerved as food to the fire. This lava is ſometimes found ſolid, and at others porous and full of bladders and holes; in the inſide it is filled up with opaque and brittle ſquare cryſtals of a dead white, or with green drops of glaſs, which decay after they have been long expoſed to the air. The colour of the lava is black, dark blue, purple, reddiſh brown, or yelloviſh, but oftenеſt black or red. Where the fire has operated very ſtrongly, it is, as it were, glazed, and looks like reſin. In the frames or great tracts of lava it is ſometimes obſerved, that the cruſt in growing cold has laid itſelf into folds; but generally it forms itſelf into a reſemblance of a rope or cable, ſometimes lengthways, and at others in the form of a circle, like unto a great cable rolled together; and generally ſo, that its thickneſs continually augments from the centre to the periphery. To this claſs I muſt alſo count a black ſolid matter, which ſtrikes fire againſt ſteel, and ſometimes takes the forms of trees or branches: ſome people have been inclined to think they are petrified trees, but I am rather of opinion that it is a real jaſper. Thirdly, pumice, black, red, and even white, which laſt has moſt probably been diſcoloured by the boiling water. Fourthly, agate; I preſerve the received name, though it is really nothing more than burned glaſs. In ſome few places it is found white, tranſparent, and almoſt in the form of cryſtal. The bluiſh ſort is alſo rare, but found in large pieces: the moſt common is the black agate, which is found generally in ſtratas, or in ſmall neſts, and ſometimes almoſt in the ſhape of cryſtal, in

oval, ſquare, or pentagonal forms. The aſtronomer, Mr. Ejnar Jonſon, has made uſe of this black glaſs in his tubes, both in Copenhagen and in Iceland, for the obſervation of the ſun, and has found them greatly preferable to the darkened glaſs. The green agate is found rather coarſer and more reddiſh, like thick bottle glaſs: it is called *braſlinnubrodcon.*

Brimſtone, which may be conſidered as the proper fuel of the fire, is found in great abundance, pure and mineralized: in the north, principally at Huſewick, and in the ſouth at Kryſewick, there are white brimſtone mines which are called *Namas.* I ſhall reſerve the baſalts for a particular letter.

LETTER XX.—TO PROFESSOR BERGMAN.

Of Mount Heckla.

Stockholm, September 7, 1773.

THE cauſe of Heckla (or, as it is called in the country, *Heckla-fiall*) having been more noticed than many other volcanos of as great extent, and no leſs wonderful and inſtructive, may partly be aſcribed to its having vomited fire ſo frequently, and partly to its ſituation, which expoſes it to the ſight of all the ſhips ſailing to Greenland and North America: as we conſidered it with greater attention than any other volcano on the iſland, I will give you a deſcription of the ſtate in which we found it on the twenty-fourth of September 1772.

After we had ſeen many tracts of lava, among which Garde and Wvalupe Hraune were the moſt conſiderable, we purſued our journey to the foot of the mountain. We had a tent pitched here, where we propoſed to paſs the night, to enable us to aſcend the mountain with greater ſpirits in the morning. The weather was extremely favourable, and we had the ſatisfaction of ſeeing whatever we wiſhed, the eruption only excepted.

The mountain is ſituated in the ſouthern part of the Iſland, about four miles from the ſea-coaſt, and is divided into three points at the top, the higheſt of which is that in the middle, and is, according to an exact obſervation with Ramſden's barometer, five thouſand feet higher than the ſea. We made uſe of our horſes, but were obliged to quit them at the firſt opening from which the fire had burſt. This was a place ſurrounded with lofty glazed walls, and filled with high glazed cliffs, which I cannot compare with any thing I ever ſaw before.

A little higher up we found a great quantity of grit and ſtones, and ſtill farther on another opening, which though not deep, however deſcended lower down than that of the higheſt point. We thought we plainly obſerved evident marks of hot boiling water in this place.

Not far from thence the mountains began to be covered with ſnow, ſome ſmall ſpots excepted, which were bare. We could not at firſt diſcern the cauſe of this difference, but ſoon found that it proceeded from the vapour which aroſe from the mountain. As we aſcended higher, theſe ſpots became larger; and about two hundred yards from the ſummit we found a hole of about one yard and a half in diameter, from which ſo hot a ſteam exhaled, that it prevented us from aſcertaining the degree of heat with the thermometer.

The cold now began to be very intenſe, as Fahrenheit's thermometer, which was at 54° at the foot of the mountain, fell to 24°. The wind was alſo become ſo violent, that we were ſometimes obliged to lie down to avoid being thrown into the moſt dreadful precipices by its fury.

We were now arrived at one of the higheſt ſummits, when our conductor, who did not take great pleaſure in the walk, endeavoured to perſuade us that this was the higheſt part of the mountains. We had juſt finiſhed our obſervations, and found by them that Ramſden's barometer ſtood at 24·238, and the thermometer, fixed to it, at 27°, when happily the clouds divided, and we diſcovered a ſtill higher ſummit. We loſt no time in deliberation, but immediately aſcended it, and when at the top diſcovered a ſpace of ground, about eight yards in breadth, and twenty in length, entirely free from ſnow; the ſand was however quite wet, from its having lately melted away. Here we experienced, at one and the ſame time, a high degree of heat and cold, for in the air Fahrenheit's thermometer was conſtantly at 24°, and when we ſet it down on the ground, it roſe to 153. The barometer was here at 22·247, and the thermometer at 38.

We could not with ſafety remain here any longer, though we were very much inclined to it; and deſcended, after having conſidered the laſt opening there, one of the ſides of which was entirely overturned, and the other quite covered with aſhes and grit. In our return we obſerved three conſiderable openings, in one of which every thing looked as red as brick. From another the lava had flowed in a ſtream of about fifty yards in breadth, which the Icelanders call *Stenaa*, or Stone Flood; and at ſome diſtance from thence the ſtream divided into three broad arms. Further on we found a large circular opening, at the bottom of which we obſerved a mountain in the form of a ſugar-loaf, in throwing up of which the fire ſeemed to have exhauſted itſelf.

The laſt eruption of mount Heckla happened in 1766; it began the fourth of April, and continued to the ſeventh of September following. Flames proceeded from it in December 1771, and in September 1772, but no flowing of lava, &c.

The mountain does not conſiſt of lava, but chiefly of ſand, grit, and aſhes, which are thrown up with the ſtones, partly melted, and partly diſcoloured by the fire. We likewiſe found ſeveral ſorts of pumice, and among them one piece with ſome ſulphur in it. The pumice was ſometimes ſo much burnt, that it was as light as tow; their form and colour was ſometimes very fine, but at the ſame time ſo ſoft, that it was difficult to remove them from one place to another: of the common lava we found both large pieces and ſmall bits, as likewiſe a quantity of black jaſper, burned at the extremities, and reſembling trees and branches. Among the ſtones thrown out of the mountain we ſaw ſome ſlate of a deep red colour.

LETTER XXI.—TO PROFESSOR BERGMAN.

Of the hot ſpouting Water-ſprings in Iceland.

Stockholm, Oct. 3, 1774.

AMONG all the curioſities in Iceland, which nature preſents to the eyes of an attentive ſpectator to raiſe his admiration, nothing can be compared to the hot ſpouting water-ſprings with which this country abounds. The hot ſprings at Aken, Carlſbad, Bath, and Switzerland, and ſeveral others which are found in Italy, are conſidered as very remarkable; but to my knowledge, except in the laſt-mentioned country, the water no where becomes ſo hot as to boil; nor is it any where known to be thrown ſo high as at the hot ſpouting water-ſprings in Iceland.

All thoſe jets d'eau which have been contrived with ſo much art, and at ſo enormous an expence, cannot by any means be compared with theſe. The water-works at Herrenhauſen throw up a ſingle column of water, of half a quarter of a yard in circumference, to the height of about ſeventy feet; thoſe on the Winterkaſten, at Caſſel, throw it up, but in a much thinner column, one hundred and thirty feet; and the jet d'eau at St. Cloud, which

which is thought the greateſt amongſt all the French water-works, caſts up a thin column eighty feet into the air: whilſt ſome ſprings in Iceland pour forth columns of water, of ſeveral feet in thickneſs, to the height of many fathoms; and many affirm, of ſeveral hundred feet.

But without relying upon what has been ſaid by others of theſe wonderful phænomena of nature, I think myſelf happy to have contemplated with mine own eyes the moſt remarkable of theſe ſprings, which has enabled me to give you an accurate account of it. I only beg leave to ſay ſomething of them in general, before I treat of that which I ſaw in particular.

Theſe ſprings are of unequal degrees of heat. From ſome the water flows gently as from other ſprings, and it is then called *laug*, a bath; from others, it ſpouts boiling water with a great noiſe, and is then called *hver* or *kittel (keſſel)*. Though the degree of heat is unequal, yet I do not remember ever to have obſerved it under 188 of Fahrenheit's thermometer. At Laugarnas we found it at 188, 191, 193. At Geyſer, Reykum, and Laugarvatn 212; and in the laſt place, in the ground, at a little hot vein of water, 213 degrees.

It is very common for ſome of the ſpouting ſprings to cloſe up, and others to ſpring up in their ſtead; there are likewiſe frequent traces of former *hvers*, where at preſent not a ſingle drop of water is to be ſeen. Many remember to have ſeen inſtances of this; and Egbert Olafsen relates, that in 1753 a new *hver* broke forth at Reikakio, ſeven fathoms in breadth, and three in depth, at the diſtance of fifty fathoms from an old ſpring, which had been ſtopped up by a fall of earth. Frequent earthquakes and ſubterranean noiſes, heard at the time, cauſed great terror to the people who lived in the neighbourhood.

All theſe hot waters have an incruſting quality, ſo that we very commonly find the exterior ſurface from whence it burſts forth covered with a kind of rind, which almoſt reſembles chaced work, which we at firſt took for lime; but we ſoon became dubious of this, as it did not ferment with acid; but we hope that you, Sir, will ſoon reſolve us. This cruſt is in general very fine; but it is, however, moſt pure and clear at the ſpouting ſprings; for at the others, where the water flows, the parts precipitated by the water are ſometimes mixed with earth, which makes the cruſt appear darker.

At the *hvers* it is very difficult, nay almoſt impoſſible, to examine within the opening the diſpoſition of the paſſage which the water has formed, both by reaſon of the heat of the water, and the violence with which it is forced out. One may, however, with confidence judge of the great by the ſmall: and it gave us the greater pleaſure, as we had an opportunity at Laugarnas to examine the vein of water itſelf a conſiderable way under the cruſt.

The water had in this place taken its courſe through a bright grey clay, the ſurface of which was covered with a white rind; but was on the ſide neareſt the clay, quite ſmooth, and criſped on the upper ſide. The vein flowed a good way under this cruſt, through a canal formed of a ſimilar matter; and the whole canal was filled with cryſtals, which had a very pleaſing effect. I had not time to examine their nature and form on the ſpot, as they were very ſmall; but I expect a more particular account of this ſubject from you, as you will find ſeveral ſpecimens of them in the collection I ſent you. We could not, however, purſue the courſe of the water very far, as we were obliged to leave it to its ſubterranean paſſages, through which nature had ſeduced it from its reſervoirs, where heated by the warmth, and compreſſed by the exhalations, it at laſt burſts from its priſon, by guſhing forth at another place, in order to make way for its vapours.

The

The water in ſome places taſtes of ſulphur, and in others not; but when drank as ſoon as it is cold, taſtes like common boiled water. The inhabitants uſe it, at particular times for dying; and were they to adopt proper regulations, it might be of ſtill greater uſe. Victuals may alſo be boiled in it, by putting it into a pot covered, and boiling it till a certain quantity is evaporated. Milk held over this water when boiling becomes ſweet, owing, moſt probably, to its exceſſive heat; as the ſame effect is produced by boiling it a long time over the fire. They have begun to make ſalt, by boiling ſea-water over it, which, when it is refined, is very fine and good. The cows which drink of it yield a great quantity of good milk. Egbert Olafsen informs us, that the water does not become troubled when alkali is thrown into it, nor does it change colour from ſyrup of violets. I do not know what degree of credit ought to be given to Horrebow, who aſſerts, that if you fill a bottle at one of the ſpouting ſprings, the water contained in the bottle will boil over two or three times during the time the ſpring throws it forth, and if corked too ſoon the bottle will burſt.

Though it cannot be denied that theſe ſprings have ſome communication with the Icelandic volcanos, yet they are ſeldom found very near them, but are diſperſed throughout the whole country. For this reaſon, hot ſprings are found among the mountains, and even on the top of the ice mountains; as on Torfa Jockul, where a great number of hot ſprings are to be met with: and among them two large *hvers*, which throw up the boiling water to a great height. There is likewiſe a lukewarm ſpring near Haadegis Hnuk, on Gutlands Jokul, at the foot of the mountain, with many traces of former *hvers*. There are even in the ſea hot ſpouting ſprings, which can only be approached at low water; as at Reyka-fiord in Iſa-fiord, where four ſprings may be obſerved in the water by the aſcending ſteam, and one *hver* on the ſurface of the water. There are alſo two others in the Oddbiarnar ſhoals, ſtill more at Drapſkar, and a great number at Sando, Urdholm, Reykey, and on the flat iſlands. To give a better idea of the ſituation of theſe ſprings, I will give a liſt of them, which I will endeavour to make as topographical as poſſible.

In Borgarfiord's Syſſel, near Leyraa, not far from the foot of the mountain of Skardſheides, we met with the firſt *hver*, which is, however, not a very ſtrong one; and not far from it there is a ſmall bath. At Lunda Reykiadal there is a *hver* and a bath; and near a farm-yard, Varma-Lakiar-Mula, a warm ſpring and a bath. A little farther to the north is the valley of Reykholts, which is two miles and a half in breadth, in the bottom of which hot baths are every where to be met with. This ſpot may be diſcovered at ſeveral miles diſtance by the vapours which exhale every where from the hot water, and unite in the air, reſembling a prodigious ſmoke ariſing from ſome volcano. The three principal *hvers* in this place are, Tunguhver, Aa-hver, and Scribla; the laſt furniſhes water to Snorralaug, Snorre Sturleſon's bath, which is eſteemed the beſt in Iceland. From this place there is no hot ſpring to be met with northward for a very large tract, till you come to Sneefield's Cape, where there is a lukewarm ſpring near the farm called Lyſehol, in Stadeſveit: at this place many remains of ancient *hvers* are to be ſeen. Still further to the north, in Dale Syſſel, is a warm bath with ſome ſprings. In Soling's Valley, and further on, near the farm Reyka-holer, in Reykianas, are many ſtrong *hvers*; particularly three very large ones, the moſt conſiderable of which is Krablanda. From thence we came to the hot ſprings of Flatdarna, Oddſhiarmarſkar, and Drapſkar; and afterwards viſited thoſe at Talkne-fiord, Arnarfiord, and Iſa-fiord in Reyka-fiord, where there is a ſtrong ſpouting ſpring. After we had paſt Cape Nord, or the northern extremity of Iceland, we met with ſome warm ſprings at Reykar-fiord; others, together with a fine bath, at Biarnar-fiord, near Kaldadarna: at Hruta-

Hruta-fiorden there is a great *hver* called Reike-hver, and another as large at Midfiorden, called Reixalaug. When you go from hence ſouthward into the country, you will find a number of boiling ſprings at Hverevalle, three of which ſpout the water high into the air with a prodigious noiſe; ſtill further to the ſouth there is a *hver* near Geitland's Jokul.

If we turn again to the north, we find hot ſprings at Blanda, others near the haven at Skaga-Strand, and ſtill more at a little diſtance from thence at Skaga-fiorden; one of which falls from a rock thirty feet high. To the eaſt there are hot ſprings in many places of Vadle Syſſel, as at Olafs-fiordr, Langaland, Kriſtnas, and Hrafnegil; but in Thingo Syſſel there are ſprings of both ſorts (baths and *hvers*) in great number, and of conſiderable dimenſions. The *hvers* in Reykia Valley deſerve to be particularly mentioned, amongſt which Oxe and Badſtofu are the largeſt.

On the eaſt ſide of the country there are no conſiderable *hvers*, though warm ſprings are to be found in Selar, Laugarvalle, Rafukells, and Fliots valleys; and on the ſouth, on Torfa Jukul. We then proceeded to Skallholt, where there are many ſprings; about a mile from thence the *hvers*, called Reikholt and Grafa, both which ſpout very high. The next *hver* is Geyſer, which I ſhall afterwards mention more minutely. Not far from this laſt is Laugervatn, a ſmall lake, round which a number of warm ſprings may be obſerved, and eight boiling ones. The road now leads us to the *hvers*, at Oelves, which is thought to be the largeſt in all Iceland; the moſt remarkable of which are Geyſer and Badſtofu.

Here is alſo a dry *hver*, from which water formerly proceeded, but now emits only ſteam through its mouth; the heat of which however is ſo great, that a pot of water placed over the opening boils in a very ſhort time. We met with ſpouting ſprings at Kruſevik in Gullpringe Syſſel, the *hver* Eine, the *hvers* at Reikianas, and ſeveral at Langarnas in Kiofar Syſſel.

From this liſt, which, however, is far from containing all the warm ſprings in Iceland, you may judge, Sir, of the prodigious number that we met with. Near moſt of them are warm baths, each of which merits a particular examination and deſcription. Eggert Olafsen and Biarne Paulſen have made very curious obſervations on ſeveral of them; but I only beg leave to mention ſome which I made at Geyſer, where is the largeſt of all the ſpouting-ſprings in Iceland, or perhaps in the known world. Theſe obſervations were made the twenty-firſt of September 1772, from ſix o'clock in the morning till ſeven at night.

Among the hot ſprings in Iceland, ſeveral of which bear the name of *geyſer*, there are none that can be compared with that which I am going to deſcribe, though the beſt deſcription will fall very ſhort of it. It is about two days journey from Heckla, not far from Skallholt, near a farm called Haukadal. Here a poet would have an opportunity of painting a picture of whatever Nature has of beautiful and terrible united, by delineating one of its moſt uncommon phænomena: it would be a ſubject worthy of the pen of a Thompſon to tranſport the reader, by poetical imagery, to the ſpot which is here preſented to the eye. Repreſent to yourſelf a large field, where you ſee on one ſide, at a great diſtance, high mountains covered with ice, whoſe ſummits are generally wrapped up in clouds, ſo that their ſharp unequal points become inviſible. This loſs however is compenſated by a certain wind, which cauſes the clouds to ſink, and cover the mountain itſelf, when its ſummit appears as is were to reſt upon the clouds. On the other ſide, Heckla is ſeen, with its three points covered with ice, riſing above the clouds, and with the ſmoke which aſcends from it, forming other clouds at ſome diſtance from the real ones: and on another ſide is a ridge of high rocks, at the foot of which

boiling

boiling water from time to time guſhes forth; and further on extends a marſh of about half a mile in circumference, where are forty or fifty boiling ſprings, from which a vapour aſcends to a prodigious height.

In the midſt of theſe is the greateſt ſpring *geyſer*, which deſerves a more exact and particular account. In travelling to the place, about a quarter of a mile from the *hver*, from which the ridge of rocks near it ſtill divided us, we heard a loud roaring noiſe, like the ruſhing of a torrent, precipitating itſelf from ſtupendous rocks. We aſked our guide what it meant? he anſwered, it was *geyſer* roaring; and we ſoon ſaw with our naked eyes what before appeared almoſt incredible.

The depth of the opening or pipe from which the water guſhes cannot well be determined; for ſometimes the water ſunk down ſeveral fathoms, and ſome ſeconds paſſed before a ſtone which was thrown into the aperture, reached the ſurface of the water. The opening itſelf was perfectly round, and nineteen feet in diameter; it ended above in a baſon which was fifty-nine feet in diameter; both the pipe and the baſon were covered with a rough ſtalactic rind, which had been formed by the force of the water; the uttermoſt border of the baſon is nine feet and an inch higher than the pipe itſelf.

The water here ſpouted ſeveral times a day, but always by ſtarts, and after certain intervals. The people who lived in the neighbourhood told us, that they roſe higher in cold and bad weather than at other times; and Egbert Olafsen and ſeveral others affirm, that it ſpouted to the height of ſixty fathoms. Moſt probably they only gueſſed by the eye, and on that account their calculation may be a little extravagant; and indeed I doubt that ever the water was thrown up ſo high, though I am much inclined to believe, that it ſometimes mounts higher than when we obſerved it.

I will here inſert an account, how high the water was thrown the day that we were there, which I hope will not be diſagreeable to you. We obſerved the height thus: every one in the company wrote down at each time that the water ſpouted, how high it appeared to him to be thrown, and we afterwards choſe the medium. The firſt column marks the ſpoutings of the water, in the order in which they follow one another; the ſecond, the time when theſe effuſions happened; the third, the height to which the water roſe; and the laſt, how long each ſpouting of water continued.

No.	Time.		Height.		Duration.	
1	At VI	42 m.	30 feet		0 m.	20 ſ.
2	—	51 —	6	—	0	20
3	VII	6 —	6	—	0	10
4	—	31 —	12	—	0	15
5	—	51 —	60	—	0	6
6	VIII	17 —	24	—	0	30
7	—	29 —	18	—	0	40
8	—	36 —	12	—	0	40

The pipe was now for the firſt time full of water, which ran ſlowly into the baſon.

No.	Time.		Height.		Duration.	
9	IX	25 —	48	—	1	10
10	X	16 —	24	—	1	00
	XII	35 minutes we heard, as it were, three diſcharges of a gun under ground, which made it ſhake, the water immediately flowed over, but ſunk again inſtantly.				
	II	8 the water flowed over the border of the baſon.				

N°	Time.	Height.	Duration.	
III	15	we again heard ſeveral ſubterraneous noiſes, though not ſo ſtrong as before.		
IV	43	the water flowed over very ſtrongly during a whole minute.		
	49	we again heard many loud ſubterraneous diſcharges, not only near the ſpring, but alſo from the neighbouring ridge of rocks, where the water ſpouted.		
11 VI	51	— 92	— 4	00

After this great effort, the water ſunk down very low into the pipe, and was entirely quiet during ſeveral minutes, but it ſoon began to bubble again; it was however not thrown up into the air, but only to the top of the pipe.

N°	Hours.	Min.	N°	Hours.	Min.
1	5	7	18	5	42
2	5	9½	19	5	43½
3	5	10½	20	5	47
4	5	13½	21	5	48½
5	5	14¾	22	5	49
6	5	17	23	5	30¼
7	5	18¼	24	5	51½
8	5	20⅛	25	5	54
9	5	21½	26	5	37½
10	5	23½	27	5	59
11	5	27¾	28	6	10
12	5	30¼	29	6	19
13	5	31¾	30	6	23
14	5	33½	31	6	26
15	5	35	32	6	29
16	5	36	33	6	30
17	5	38			

The force of the vapours which throw up this water is exceſſive; it not only prevents the ſtones which are thrown into the opening from ſinking, but even throws them up to a very great height, together with the water. I muſt not forget to mention a very curious circumſtance: when the baſon was full of water, we placed ourſelves before the ſun in ſuch a manner, that we could ſee our ſhadows in the water, every one obſerved round the ſhadow of his own head (though not round the heads of the others) a circle of almoſt the ſame colours which compoſe the rainbow, and round this another bright circle: this moſt probably proceeded from the vapours exhaling from the water. I remember to have ſeen ſomething ſimilar to it when travelling in the ſummer, particularly in the meadows, and it is ſooneſt obſerved when riding on horſeback, or in a carriage, when you have your ſhadow on one ſide.

Not far from this place, another ſpring at the foot of the neighbouring ridge of rocks ſpouted water to the height of one or two yards each time.

N°	Hours.	Min.			N°	Hours.	Min.
1	3	45	—	—	7	4	0
2	3	47½	—	—	8	4	3
3	0	50½	—	—	9	0	5¾
4	0	53½	—	—	10	0	8½
5	0	55	—	—	11	0	11¼
6	0	57¾	—	—	12	0	14

The opening through which this water iſſued was not ſo wide as the other: we imagined it poſſible to ſtop up the hole entirely by throwing large ſtones into it, and even flattered ourſelves that our attempt had ſucceeded; but to our great aſtoniſhment the water guſhed forth in a very violent manner, which ſhews how little the weak efforts of man avail, when they endeavour to preſcribe bounds to the works of nature. We haſtened to the pipe, and found all the ſtones thrown aſide, and the water playing freely through its former channel.

In theſe large ſprings the waters were hot in the higheſt degree, and taſted a little of ſulphur, but in other reſpects were pure and clear. In the ſmaller ſprings in the neighbourhood the water was tainted; in ſome it was as muddy as that of a clay-pit, in others as white as milk; and yet there are a few ſprings where the water forces itſelf through a fire underneath as red as blood.

I have already obſerved, that near moſt of theſe ſprings and *hvers* there are baths, which are frequently viſited by the natives: there are alſo in many places dry and ſweating-baths. Eggert Olafsen mentions one of theſe baths at Huuſevik, in North Iceland; and I had the curioſity of ſeeing one of them at Thibſaarholt, not far from Skallholt, which conſiſted of a hut raiſed of earth, into which hot ſteams aroſe from many holes. Fahrenheit's thermometer, which was at 57 degrees in the open air, roſe to 93 in the hut whilſt it was open, and when it was placed in one of the little openings the ſteam aroſe to 125.

LETTER XXII.—TO PROFESSOR BERGMAN.

Of the Pillars of Baſalt.

Stockholm, June 6, 1773.

AMONG the effects of fire, ſome of which are extremely dreadful, and all of them very extraordinary and remarkable, none have in latter times attracted more attention than thoſe large regular pillars known by the name of Baſalts. There had formerly been hardly any places obſerved in Europe where this kind of ſtone was found, the Giant's Cauſeway excepted; and the greater part of our mineralogiſts have, if I am not miſtaken, conſidered them as a kind of cryſtalization. Mr. Deſmarets was the firſt who maintained, in a diſſertation preſented to the French academy of ſciences, that they were produced by fire, wherein he deſcribed ſome baſalts found near St. Sandour, in Auvergne.

This opinion at firſt appeared almoſt abſurd to our natural hiſtorians, as it was not believed that volcanos had ever been in theſe places where baſalt pillars were found.

This new diſcovery however occaſioned a more exact enquiry concerning other places where theſe pillars are met with. All theſe enquiries only ſerved to confirm Mr. Deſmaret's opinion, by proving that theſe baſalt pillars muſt have been produced by ſubterraneous fires.

There is no one ſurely will entertain the leaſt doubt of a ſubterraneous fire having formerly exiſted where theſe pillars now ſtand, as at Stolpenſtein in Meiſſen; near Lauban in Luſatia; in Bohemia; near Leignitz in Sileſia; near Brandau in Heſſia; in Sicily; near Bolſenna, Montebello, and St. Forio in Italy; near St. Lucas in the diſtrict of St. Vicenza; near Monte Roſſo in the Paduan diſtrict, and Monte Diavolo in the mountains of Verona; in Lower Languedoc; in Iceland, and in the weſtern iſlands of Scotland; which you, Sir, have all mentioned in your Coſmography. Alſo in St. Giovanni, Monte Caſtello, Monte Nuovo, Monte Oliveto, near Cadair Idris in Wales,

in England, almoſt every where in the Velay and Auvergne, where whole towns, as Chillac and St. Flour, are built upon theſe pillars. But as this matter has not yet been fully inveſtigated, and it cannot be determined with certainty in what manner theſe pillars are formed, though they are known to be produced by fire, perhaps it will not be diſagreeable to you, if I ſay ſomething of the many baſalt pillars in Iceland, as well as of thoſe in the iſle of Staffa, which you will readily acknowledge to be more ſingular than any thing nature ever produced of this kind.

It is well known that theſe pillars are very common in Iceland, and ſome account is alſo given of them in the Phyſical Deſcription publiſhed of the country. The lower ſort of people imagine theſe pillars have been piled upon one another by the giants, who made uſe of ſupernatural force to effect it, whence they have obtained the name of the *Trolla-hlaud Trollkonu-gardur* in ſeveral places. They have generally from three to ſeven ſides, and are from four to ſix feet in thickneſs, and from twelve to ſixteen yards in length, without any horizontal diviſions. But ſometimes they are only from ſix inches to one foot in height, and they are then very regular, as thoſe at Videy, which are made uſe of for windows and door-poſts. In ſome places they only peep out of the mountains here and there among the lava, or ſtill oftener among *tuffa*; in other places they are quite overthrown, and only pieces of broken pillars appear. Sometimes again they extend two or three miles in length without interruption. In the mountain called Glockenberg in Sneſialdſnas, this kind of ſtone appears in a manner very different from any other place in Iceland; for on the top the pillars lie quite horizontally, in the middle they are ſloping, and the loweſt are perfectly perpendicular; in ſome places they are bent as a ſemi-circle, which proves a very violent effect of the fire on the pillars already ſtanding, as in moſt places, or at leaſt in a great many, they are entirely perpendicular, and by their form and ſituation, that they have even been burnt in a perpendicular direction.

As to the matter of which the Icelandic baſalts are compoſed, it is in ſome places ſimilar to that of which the pillars at Staffa conſiſt, though in others it is more porous, and inclines more to grey. And who knows, if an attentive and curious naturaliſt, who had both time and talents requiſite for ſuch an undertaking, might not eaſily trace all the gradations between the coarſeſt lava and the fineſt pillar of baſalt? I myſelf ſaw ſome of this laſt ſort at Videy, which were ſolid, of a blackiſh grey, and compoſed of ſeveral joints. And not far from thence, at Laugarnäs, near the ſea-ſhore, I ſaw a porous glaſſy kind of ſtone, conſequently lava, but was ſo indiſtinctly divided, that I was a long time undetermined, whether I ſhould conſider it as pillars or not; but at length the reſt of the company, as well as myſelf, were perſuaded that they really were ſuch. But I will poſtpone the examination of the matter of which theſe pillars conſiſt, and of the manner in which they are formed, till ſuch time as I have given you the promiſed deſcription of the iſle of Staffa.

A piece of good fortune procured us the pleaſure of being the firſt who ever examined theſe wonders of nature with an attentive eye. Among all thoſe who have publiſhed deſcriptions of Scotland, there are none except Buchanan, whoſe account, however, is very imperfect, that mentions a ſingle ſyllable of theſe pillars. Mr. Pennant, an indefatigable and experienced naturaliſt, in the ſame year that we viſited this iſland, made a tour to Scotland to examine the natural productions of that country, but was prevented by a contrary wind from going to Staffa. Moſt probably we ſhould not have come there neither, if the uſual ebb and flood, which is very ſtrong between the weſtern iſlands of Scotland, had not forced us in our way to Iceland, on the twelfth of Auguſt in the night, to caſt anchor in the ſound, between the iſle of Mull and Morvern on the conti-

nent, exactly oppoſite to Drumnen, the ſeat of Mr. Maclean. We were immediately invited to land, and breakfaſted there, with that hoſpitality which characteriſes the inhabitants of the Highlands of Scotland. Mr. Leach, another gueſt of Mr. Maclean, gave us many particulars of theſe pillars, which he had viſited a few days before. Mr. Banks's deſire of information could not reſiſt the offer of this gentleman to accompany us to Staffa; we therefore went on board our long-boat the ſame day, and arrived there at nine o'clock in the evening. It was impoſſible for our ſurpriſe to be increaſed, or our curioſity to be fuller gratified, than they were the next morning when we beheld the no leſs than beautiful ſpectacle which nature preſented to our view.

If we even with admiration behold art, according to the rules preſcribed to it, obſerving a certain kind of order, which not only ſtrikes the eye, but alſo pleaſes it; what muſt be the effect produced upon us when we behold Nature diſplaying, as it were, a regularity which far ſurpaſſed every thing art ever produced! An attentive ſpectator will find as much occaſion for wonder and aſtoniſhment, when he obſerves how infinitely ſhort human wiſdom appears, when we attempt to imitate Nature in this as well as in any other of her grand and awful productions. And though we acknowledge Nature to be the miſtreſs of all the arts, and aſcribe a greater degree of perfection to them, the nearer they approach and imitate it, yet we ſometimes imagine that ſhe might be improved, according to the rules of architecture.

How magnificent are the remains we have of the porticos of the antients! and with what admiration do we behold the colonnades which adorn the principal buildings of our times! and yet every one who compares them with Fingal's Cave, formed by Nature in the iſle of Staffa, muſt readily acknowledge, that this piece of Nature's architecture far ſurpaſſes every think that invention, luxury, and taſte ever produced among the Greeks.

The iſland of Staffa * lies weſt of Mull, three miles N. E. of Jona or Kolumb-Kill, and is about a mile in length, and half a mile in breadth: it belongs to Mr. Lauchlan Mac-Quarie. On the weſt ſide of the iſland is a ſmall cave, where there is a very convenient landing-place, but where no regular baſalt figures are to be met with. To the ſouth of this cave are ſome narrow pillars, which, inſtead of ſtanding upright, are all inclined, and look like ſo many pieces of an arch. Further on you leave a ſmall grotto on your right hand, which is not compoſed of pillars, though they appear more diſtinctly and larger above it, and in one place reſemble the interior timber-work of a ſhip. Directly oppoſite to it, only a few yards diſtant, is the peninſula of Bo-ſcha-la, which entirely conſiſts of regular though leſs pillars, that are all of a conical figure. Some of them lie horizontally, others incline as it were to the central point, as to the upper end, but the greater number are perfectly perpendicular. The iſland itſelf, oppoſite to Bo-ſcha-la, conſiſts of thick columns or pillars, which are not however very high, as they gradually decreaſe in approaching to the water, and extend into the ſea as far as the eye can reach. You may walk upon theſe with great eaſe, as from one ſtep of a ſtaircaſe to another, till you come to Fingal's, or more properly ſpeaking, to Fiuhn Mac Coul's grotto or cave, which enters into the mountain from N. E. to E.

This cave conſiſts of very regular pillars, which to a great extent on both ſides, and in the moſt interior part, ſupport an arched vault, compoſed of the obtuſe points of

* Mr. Banks's account of this iſland, as communicated by that intelligent gentleman to Mr. Pennant, and inſerted in his Tour in Scotland, and Voyage to the Hebrides in 1772, is too curious to be omitted, as it is not only very intereſting in itſelf, but is an undeniable proof of the accuracy and fidelity with which our author, Dr. Troil, has treated of the various ſubjects contained in this publication:—the editor deems it therefore unneceſſary to apologize for ſubjoining an extract of it to this letter.

pillars

pillars crowded close together. The bottom of the cave, which is filled with clear fresh water several feet in depth, is likewise covered with innumerable pieces of pillars, which compose its floor. The colour of the pillars is of a blackish grey; but between the joints there is a yellow stalactic quarry rind exhaled, which serves to make these divisions more distinct, and produces an agreeable effect to the eye, by the many different modulations of colour. It is so light within the cave, that one can distinguish the innermost range of pillars perfectly well from without. The air in it is very pure and good, as it is constantly changed by the rising and falling of the water during the tide. Very far into the cave there is a hole in the rock, somewhat lower than the surface of the water standing in it, which makes a pleasing kind of noise on every flux and reflux of the tides. One may walk in most parts of the cave on the broken points of some pillars arising above the surface of the water, but it is most convenient to go in a boat. We made the following measurements of the cave:

	F.	I.	F.	I.
The length, from the farthest of the basalt pillars, which from the shore formed a canal to the cave	121	6	371	6
From the commencement of the vault to the end of the cave	250	0		
The breadth of its entrance			53	7
Of the interior end			20	0
The height of the vault at the entrance of the cave			117	6
Of ditto, at the interior end			70	0
The height of the outermost pillar in one corner			39	6
The height of another, in the north-west corner			54	0
The depth of the water at entrance			18	0
Of the inside end			9	0

Above the cave was a stratum of a stone mixed with pieces of basalt. We made the following measurements:

	F.	I.
From the water to the foot of the pillars	36	8
Height of the pillars	32	6
Height of the arch or vault above the top of the pillars	31	4
The stratum above this	34	4

From hence, a little farther north-west, we met with the largest pillars which are to be found in the whole island. The place on which they stood was likewise quite free, so that we were enabled to examine it. The following was the result of our measurement:

The western corner of Fingal's Cave:	F.	I.
1. From the water to the foot of the pillars	12	10
2. Height of the pillars	37	3
3. The stratum above them	66	9
Farther westward:		
1. The stratum beneath the pillars	11	0
2. Height of the pillars	54	0
3. The stratum above	61	6
Still more westward:		
1. Stratum beneath the pillars	17	1
2. Height of the pillars	50	0
3. The stratum above them	51	1

Still more to the weſt:	F.	I.
1. Stratum beneath the pillars	19	8
2. Height of the pillars	55	1
3. The ſtratum above	54	7

The ſtratum beneath the pillars here mentioned, is evidently *tuffa*, which had been heated by fire, and ſeems to be interlarded, as it were, with ſmall bits of baſalt; and the red or ſtratum above the pillars, in which large pieces of pillars are ſometimes found irregularly thrown together, and in unequal directions, is evidently nothing elſe but lava. Though a prodigious degree of fire muſt formerly have been requiſite to produce this upper ſtratum, yet there are not the leaſt traces in its exterior, the pillars having been removed by it, for the whole enormous maſs reſts upon them.

When you move farther on, and paſs the northern ſide of the iſland, you come to Cormorant's Cave, where the bed beneath the pillars is raiſed, and the pillars themſelves decreaſe in height: they are, however, tolerably diſtinct, till you are paſt a bay which extends very far into the country, on the ſide of which the pillars entirely diſappear. The mountains here conſiſt of a dark brown ſtone, of which I cannot affirm with certainty whether it is lava or not, and where not the leaſt regularity is to be obſerved; but as ſoon as you paſs the ſouth-eaſt ſide of the iſland, the ſtones begin again to aſſume a regular figure, though ſo gradually, that it is ſcarcely perceptible at firſt, till at laſt, the regular and crooked pillars again appear with which I began my deſcription.

The pillars have from three to ſeven ſides, but the greater number have five or ſix, and ſo crouded together, that a heptagonal pillar is ſurrounded with ſeven others, which join cloſely to its ſeven ſides. In ſome places, however, there are little inſignificant openings, but they are filled up with *quarz*, which, in one place, had even made its way through a number of pillars, though without in the leaſt deſtroying their regularity. The pillars conſiſt of many joints or pieces, of about a foot in height, which ſo exactly fit upon one another, that it is difficult to introduce a knife between the interſtices. The upper piece was generally concave, ſometimes flat and rarely convex; if the upper joint was flat, the loweſt was ſo likewiſe, but when it was excavated, the lower one was rounded and reverſed.

The ſides of the pillars are not all equally broad. The following meaſurements were taken of four pillars:

		F.	I.
N° I. with 4 ſides.			
1ſt ſide	Diameter	1	5
2d		1	1
3d		1	6
4th		1	1
N° II. with 5 ſides.			
1ſt ſide	Diameter	1	10
2d		1	10
3d		1	5
4th		1	7½
5th		1	8
No. III. with 6 ſides.			
1ſt ſide	Diameter	0	10
2d		2	2
3d		2	2

4th

	F.	I.
4th	1	11
5th	2	2
6th	2	9
N° IV. with 7 ſides.		
1ſt ſide Diameter	2	10
2d	2	4
3d	1	10
4th	2	0
5th	1	1
6th	1	6
7th	1	3

The pillars are all over as ſmooth, and as ſharp cornered as thoſe of the Giant's Cauſeway; their colours are generally black, though the external ſides ſometimes incline to yellow, as their ſurfaces are bleached by the weather. As to their grain and ſubſtance, they entirely reſemble, and are moſt probably the ſame original ſubſtance as the Icelandic agate. As I have nothing remaining of it, I cannot examine what effect borax and other alloys, or aqua-fortis, and the like, would have upon it: what is the nature of its proper gravity, and what poliſh it will admit of, it would, notwithſtanding, be uſeful to be informed of in order to compare it with ſimilar kinds of ſtone from other parts.

But in what manner have theſe regular pillars been produced? It is the received opinion that the fire has been acceſſary to it: you have yourſelf remarked, Sir, that it muſt either have been a matter which had been melted by fire, and burſt afterwards, and that then a liquid, which we are yet unacquainted with, muſt have produced their regular cryſtaline figures; or elſe it muſt have been, as you have likewiſe obſerved, a kind of earth, which, after having been ſoftened by the exhalations ariſing from a ſubterraneous fire, its whole maſs was forced out of its ſituation, and aſſumed this regular form as it grew dry. I have noticed this diſtinct and regular appearance in dried clay, and even in ſtarch when dried in a cup or baſon. For it may be demonſtrated that they are not cryſtals formed by Nature, by their not being produced as all other cryſtals are, by external appoſition (per appoſitionem) nor in any other matrix, as is common among cryſtals.

It would be very difficult to determine whether the matter of which theſe priſmatic pillars conſiſt, burſt into the regular forms after it was melted, and was growing cold, or whilſt it was drying, as you ſeem inclined to believe: I cannot deny that my eyes have prepoſſeſſed me in favour of the firſt opinion, in all thoſe places where I have ſeen any of theſe pillars; but as ſo many objections may be offered againſt this opinion, I am obliged to leave the matter undetermined. The following may, however, ſerve as a proof, that I did not, without due foundation, believe them to be a kind of lava, which burſt in growing cold and hard. Firſt, you find both in the iſland of Staffa and many other places, that the pillars ſtand on lava or tuffa, and are ſurrounded by this matter. Secondly, at Staffa, there was a large ſtratum above the pillars, in which there were many pieces of theſe pillars irregularly thrown among one another, which leaves us to conjecture that they muſt have been more in number, and higher after an old eruption of fire, but that a ſubſequent eruption had overthrown them, and mixed them with the whole maſs. Thirdly, we found one of theſe pillars, on breaking it, full of drops, almoſt like a lactile or dripping ſtone; and none ſurely will pretend a baſalt to be of ſuch a compoſition. Fourthly, I have formerly ſaid, that the pillars in ſome

places,

places reſemble the inſide timber-work of a ſhip; that is to ſay, theſe pillars which moſt probably were quite ſtrait at firſt, in falling received this crooked inclination; nor were it alone the joints of the outermoſt or loweſt ſide which warped a little, but each ſtone was bent ſingly. Fifthly, we found on the ſhore at Hiſtra, near Skallholt, a piece of baſalt, with a piece of glaſs ſticking in it, in the ſame manner as granate formed cryſtals are found in the baſalts at Bolſenna, which are like thoſe that abound in the lava of Iceland and Italy. And laſtly, a kind of ſtone near Langarnas in Iceland, which was much coarſer, and more glaſſy than the common baſalts, and evidently was lava burſt into polyedrous and regular figures, though not quite ſo regular as the above-mentioned pillars.

What I have here ſaid, might eaſily induce one to imagine that the baſalt, after having been melted, and was grown hard again, had been burſt into ſuch pillars. But two objections, which you raiſe againſt this opinion, are difficult to be removed. Firſt, this matter melts ſo eaſily, that it becomes glaſs without difficulty, before the blow-pipe for aſſaying; whence it ſeems that this maſs muſt neceſſarily have been changed to glaſs, if it had been expoſed to ſo a great fire as that of an eruption. But may one ſafely judge of an experiment made in miniature before the blow-pipe of the workings of Nature at large? Might not, perhaps, an addition we are unacquainted with, have prevented the maſs from becoming glaſs, and cauſe it to break into theſe regular figures though we cannot now determine wherein this addition conſiſted? Secondly, we find that the trapp * in Weſt-Gothland, which both in appearance and ſubſtance ſo much reſembles baſalts, though it does not form itſelf into pillars, ſtands on ſlate; and how could this trapp have been formed by the fire, without, at the ſame time, kindling the bed, which is of ſo combuſtible a nature? But ſhould not, perhaps, the fire be able to form the trapp into pillars? Perhaps all baſalt pillars may have been a maſs of trapp in the inſide of the earth, which, having been liquified during an eruption, was thrown up, and ſplit into pillars? But, Sir, I fear to fatigue you with my conjectures and queſtions; it would, however, be very agreeable to me and other naturaliſts, if you would kindly communnicate to us your thoughts on this ſubject. This would, no doubt, enable us to judge with more certainty of baſalts, which at preſent engages the attention of the curious in general, and all naturaliſts in particular.

ACCOUNT OF THE ISLAND OF STAFFA, COMMUNICATED BY JOSEPH BANKS, ESQ.

IN the ſound of Mull we came to anchor (Auguſt 12, 1772) on the Morvern ſide, oppoſite to a gentleman's houſe called Drumnen: the owner of it, Mr. Maclean, having found out who we were, very cordially aſked us aſhore, we accepted his invitation, and arrived at his houſe; where we met an Engliſh gentleman, Mr. Leach, who no ſooner ſaw us, than he told us, that about nine leagues from us was an iſland, where he believed no one even in the highlands had been, on which were pillars like thoſe of the Giant's Cauſeway: this was a great object to me who had wiſhed to have ſeen the cauſeway itſelf, would time have allowed: I therefore reſolved to proceed directly, eſpecially as it was juſt in the way to the Columb-kill; accordingly having put up two

* A kind of ſtone in Linn. Syſt. Nat. Mineralogy.

days' proviſions, and my little tent, we put off in the boat about one o'clock for our intended voyage, having ordered the ſhip to wait for us in Tobir-more, a very fine harbour on the Mull ſide.

At nine o'clock, after a tedious paſſage, having had not a breath of wind, we arrived, under the direction of Mr. Maclean's ſon and Mr. Leach. It was too dark to ſee any thing, ſo we carried our tent and baggage near the only houſe upon the iſland, and began to cook our ſuppers, in order to be prepared for the earlieſt dawn, to enjoy that which from the converſation of the gentlemen we had now raiſed the higheſt expectations of.

The impatience which every body felt to ſee the wonders we had heard ſo largely deſcribed, prevented our morning's reſt; every one was up and in motion before the break of day, and with the firſt light arrived at the S. W. part of the iſland, the ſeat of the moſt remarkable pillars; where we no ſooner arrived, than we were ſtruck with a ſcene of magnificence which exceeded our expectations, though formed, as we thought, upon the moſt ſanguine foundations: the whole of that end of the iſland ſupported by ranges of natural pillars, moſtly above fifty feet high, ſtanding in natural colonnades, according as the bays or points of land formed themſelves: upon a firm baſis of ſolid unformed rock, above theſe, the ſtratum, which reaches to the ſoil or ſurface of the iſland, varied in thickneſs, as the iſland itſelf formed into hills or vallies; each hill, which hung over the columns below, forming an ample pediment; ſome of theſe above ſixty feet in thickneſs, from the baſe to the point, formed by the ſloping of the hill on each ſide, almoſt into the ſhape of thoſe uſed in architecture.

We proceeded along the ſhore, treading upon another Giant's Cauſeway, every ſtone being regularly formed into a certain number of ſides and angles, till in a ſhort time we arrived at the mouth of a cave, the moſt magnificent, I ſuppoſe, that has ever been deſcribed by travellers.

The mind can hardly form an idea more magnificent than ſuch a ſpace, ſupported on each ſide by ranges of columns; and roofed by the bottoms of thoſe, which have been broke off in order to form it; between the angles of which a yellow ſtalagmitic matter has exuded, which ſerve to define the angles preciſely, and at the ſame time vary the colour with a great deal of elegance; and to render it ſtill more agreeable, the whole is lighted from without; ſo that the fartheſt extremity is very plainly ſeen from without; and the air within being agitated by the flux and reflux of the tides, is perfectly dry and wholeſome, free entirely from the damp vapours with which natural caverns in general abound.

We aſked the name of it; ſaid our guide, The cave of Fiuhn: what is Fiuhn? ſaid we. Fiuhn Mac Coul, whom the tranſlator of Oſſian's works has called Fingal. How fortunate that in this cave we ſhould meet with the remembrance of that chief, whoſe exiſtence, as well as that of the whole epic poem, is almoſt doubted in England!

Enough for the beauties of Staffa; I ſhall now proceed to deſcribe it and its productions more philoſophically.

The little iſland of Staffa lies on the weſt coaſt of Mull, about three leagues N. E. from Jona, or the Columb-Kill: its greateſt length is about an Engliſh mile, and its breadth about half a one. On the weſt ſide of the iſland is a ſmall bay, where boats generally land: a little to the ſouthward of which the firſt appearance of pillars are to be obſerved; they are ſmall, and inſtead of being placed upright, lie down on their ſides, each forming a ſegment of a circle; from thence you paſs a ſmall cave, above which, the pillars now grown a little larger, are inclining in all directions: in one place in particular a ſmall maſs of them very much reſemble the ribs of a ſhip: from hence having

paſſed the cave, which if it is not low water, you muſt do in a boat, you come to the firſt ranges of pillars, which are ſtill not above half as large as thoſe a little beyond. Over againſt this place is a ſmall iſland, called in Erſe *Boo-ſha-la*, ſeparated from the main by a channel not many fathoms wide: this whole iſland is compoſed of pillars without any ſtratum above them; they are ſtill ſmall, but by much the neateſt formed of any about the place.

The firſt diviſion of the iſland, for at high water it is divided into two, makes a kind of a cone, the pillars converging together towards the centre: on the other, they are in general laid down flat: and in the front next to the main, you ſee how beautifully they are packed together; their ends coming out ſquare with the bank which they form: all theſe have their tranſverſe ſections exact, and their ſurfaces ſmooth, which is by no means the caſe with the large ones, which are cracked in all directions. I much queſtion, however, if any one of this whole iſland of Boo-ſha-la is two feet in diameter.

The main iſland oppoſite to Boo-ſha-la, and farther towards the N. W. is ſupported by ranges of pillars pretty erect, and though not tall (as they are not uncovered to the baſe) of large diameters; and at their feet is an irregular pavement, made by the upper ſides of ſuch as have been broken off, which extends as far under water as the eye can reach. Here the forms of the pillars are apparent; theſe are of three, four, five, ſix, and ſeven ſides; but the numbers of five and ſix are much the moſt prevalent. The largeſt I meaſured was of ſeven; it was four feet five inches in diameter*. The ſurfaces of the large pillars in general are rough and uneven, full of cracks in all directions; the tranſverſe figures in the upright ones never fail to run in their true directions: the ſurfaces upon which we walked were often flat, having neither concavity nor convexity; the larger number however were concave, though ſome were very evidently convex: in ſome places the interſtices within the perpendicular figures were filled up with a yellow ſpar; in one place a vein paſſed in among the maſs of pillars, carrying here and there ſmall threads of ſpar. Though they were broken, and cracked through and through in all directions, yet their perpendicular figures might eaſily be traced; from whence it is eaſy to infer, that whatever the accident might have been that cauſed the diſlocation, it happened after the formation of the pillars.

From hence, proceeding along ſhore, you arrive at Fingal's Cave, which runs into a rock in the direction of N. E. by E. by the compaſs.

Proceeding farther to the N. W. you meet with the higheſt range of pillars, the magnificent appearance of which ſurpaſſes all deſcription: here they are bare to their very baſis; and the ſtratum below them is alſo viſible: in a ſhort time it riſes many feet above the water, and gives an opportunity of examining its quality. Its ſurface is rough, and has often large lumps of ſtone ſticking to it, as if half immerſed; itſelf, when broken, is compoſed of a thouſand heterogeneous parts, which together have very much the appearance of a lava; and the more ſo, as many of the lumps appear to be of the very ſame ſtone of which the pillars are formed: this whole ſtratum lies in an inclined poſition, dipping gradually towards the S. E. Hereabouts is the ſituation of the higheſt pillars. The ſtratum above them is uniformly the ſame, conſiſting of numberleſs ſmall pillars, bending and inclining in all directions, ſometimes ſo irregularly, that the ſtones can only be ſaid to have an inclination to aſſume a columnar form; in others more regular, but never breaking into, or diſturbing the ſtratum of large pillars, whoſe tops every where keep an uniform and regular line.

* As Mr. Banks's meaſurement and dimenſions of theſe and other remarkable pillars, and of Fingal's Cave, agree even to a ſingle figure with thoſe given by our accurate Author in this work, the repetition of them would have been uſeleſs; for which reaſon they are omitted.

Proceeding now along ſhore round the north end of the iſland, you arrive at *Oua na ſcarve*, or the Cormorant's Cave: here the ſtratum under the pillars is lifted up very high; the pillars above it are conſiderably leſs than thoſe at the N. W. end of the iſland, but ſtill very conſiderable. Beyond is a bay, which cuts deep into the iſland, rendering it in that place not more than a quarter of a mile over. On the ſides of this bay, eſpecially beyond a little valley, which almoſt cuts the iſland into two, are two ſtages of pillars, but ſmall; however, having a ſtratum between them exactly the ſame as that above them, formed of innumerable little pillars, ſhaken out of their places, and leaning in all directions.

Having paſſed this bay, the pillars totally ceaſe: the rock is of a dark-brown ſtone, and no ſigns of regularity occur till you have paſſed round the S. E. end of the iſland (a ſpace almoſt as large as that occupied by the pillars), which you meet with again on the weſt ſide, beginning to form themſelves irregularly, as if the ſtratum had an inclination to that form, and ſoon arrive at the bending pillars where I began.

The ſtone of which the pillars are formed is a coarſe kind of baſalts, very much reſembling the Giant's Cauſeway in Ireland, though none of them are near ſo neat as the ſpecimens of the latter, which I have ſeen at the Britiſh Muſeum, owing chiefly to the colour, which in ours is a dirty brown, in the Iriſh a fine black: indeed the whole production ſeems very much to reſemble the Giant's Cauſeway, with which I ſhould willingly compare it, had I any account of the former before me.

Thus much we have taken from Mr. Banks's account of the iſland of Staffa—which Mr. Pennant aſſures the public, in a note to his Tour in Scotland (p. 269), was copied from his Journal, concluding in theſe words: "I take the liberty of ſaying (what by this time that gentleman, meaning Mr. Banks, is well acquainted with) that Staffa is a genuine maſs of baſalts, or Giant's Cauſeway; but in moſt reſpects ſuperior to the Iriſh in grandeur."

We think Mr. Pennant might have ſpared his reader this information, as Mr. Banks in his account informs us, that it is a Giant's Cauſeway formed of coarſe baſalts.

LETTER XXIII.—FROM CHEVALIER IHRE TO DR. TROIL.

Concerning the Edda.

SIR, Upſala, October 1, 1776.

ACCORDING to your requeſt, I ſend you an anſwer to the objections made by Mr. Schloczer againſt my opinion of the Edda, which, together with a tranſlation of my letter to Mr. Lagerbring, on the ſubject of a manuſcript of the Icelandic Edda, is, as you know, inſerted in that gentleman's Icelandic hiſtory.

It gives me great pleaſure to find that my thoughts on theſe ſubjects have been examined by men of learning in Germany, by which means a number of falſe notions which had been formed on the ſubject and deſign of this book have been removed; and I am very happy to receive any objections which may tend to convince me that I have been miſtaken.

Though I now reſume the pen, it is not ſo much with any immediate deſign to refute thoſe objections which have been made againſt me, as to give thoſe accounts and explanations which have been required of me, and which I think myſelf more capable of doing than any other perſon, as I can command the codex whenever I think proper. Mr. Schloczer and I propoſe the ſame end to ourſelves, namely, the inveſtigation of truth.

Mr. Schloczer's firſt objection is, that I have not given a complete deſcription of the

manuſcript, its ſize, &c. He is perfectly right in this point, and I will briefly endeavour to repair this difficulty; but firſt, I muſt obſerve a diplomatic deſcription was not ſo much required in that letter, as I had directed my attention more to the contents of the book than its external appearance.

I intended to ſhew what was the view of the author of the Edda in compoſing this work, what parts belonged to it, and which did not, wherein our manuſcript differed from Reſenius's edition, whence the book had obtained the name of Eddee, &c. &c. and its diplomatical deſcriptions would have afforded no information in any of theſe articles. This letter was beſides not addreſſed to any foreign man of learning, but to one of my learned countrymen, well verſed in ancient literature, who had frequently had this manuſcript in his own hands, and examined it, and was perhaps better acquainted with it than myſelf. It would have been very ſuperfluous to tell him, it was written in ancient characters, in the Icelandic language, on parchment.

But to oblige Mr. Schloczer, and perhaps many others, I will inform them that this codex, as I ſaid before, is written upon parchment, the colour of which is dark brown, which may proceed partly from its old age, and partly perhaps from its having been long kept, and made uſe of in the Icelandic ſmokey rooms. It is in very good preſervation, and in general legible. It is true, there are ſome round holes in the parchment, but theſe ſeem to have been there at firſt, as no part of the text is loſt by them. The ſize is a ſmall quarto, one finger in thickneſs, containing fifty four leaves and a half, or one hundred and nine pages, beſides a white leaf before, and one behind, on which there are however ſome bad figures, of which theſe on the firſt repreſent Gangleri, with Herjafuhar and Thridi, who reſolve queſtions. The characters are old, and when compared with many others, ſeem to prove that the copier lived about the beginning of the fourteenth century: but all this is of very little importance. Mr. Schloczer believes his ſubſequent queſtions may give more light in ſettling the principal point, as they tend to diſcover who was the author of the Edda, and what really belongs to it.

He is therefore more curious to know what is contained in this codex. Mr. Schloczer believes he has ſo much more reaſon for putting this queſtion, as I myſelf have hinted, that beſides Demiſagor, Koeninggar, and Liodſgreinir, it contained a liſt of Icelandic lagmen, and a *langfedgatal* or genealogy of Sturleſon's anceſtors. He therefore deſires to know if this codex is not a magazine of all kinds of Icelandic works, which have been accidentally collected into one volume, and bound together? I anſwer to this, if the caſe were thus, Mr. Schloczer might have expected from a man who acted with candour and ſome knowledge of the matter before him, that he would not have omitted this circumſtance. I therefore now declare that there is nothing elſe in it, but what has already been mentioned; unleſs I add, that p. 92 and 93, after the author has deſcribed the general rules of poetry, and the nature of letters, and the copier has left half a blank page before he writes the names of all the different ſorts of verſification uſed in the Icelandic poetry, another hand has patched in a ſteganographical writing, of which I did not know what to make during a long time, and indeed I did not take great pains to decypher it.

I will however give a ſpecimen of it: *dfxtfrb ſcrkptprks bfnfdkth ſkt pmnkbxs hprks.* As I was reading in Vanly's Bibliotheca Anglo Saxonica, I accidentally met with a ſimilar collection of conſonants, with a key affixed to it, which ſhewed that the whole ſecret conſiſted in placing, inſtead of each vowel, that conſonant which in the alphabet followed next to it; alſo inſtead of *a, e, i, o, u, y,* the letters *b, f, k, p, x, z,* were put; and according to this rule the afore-mentioned riddle ſignified, Dextera ſcriptoris benedicta ſit omnibus horis.

I afterwards found the ſame kind of ſteganography mentioned in a little work aſcribed to Rhrabanus Maurus, under the title of De Inventione Litterarum, and which is ſo celebrated on account of the proof contained in it of the runes of the Marcomans. After letters became more univerſally known among the people, the ſubtle monks however, deſirous of knowing ſomething which the vulgar were unacquainted with, invented various myſterious ways of writing in this manner, which they not only make uſe of among themſelves, but introduced in their public writings. This taſte met with admirers among our anceſtors in Sweden, and thence we find ſo many kinds of what are called *villrunes*, which were unintelligible to the vulgar. See in the Bautil, N° 25, 205, 331, 361, 539, 568, 571, 572, 581, 648, 748, 767, 817, 819, 822, 1001, 1088, and many more in Vormius. Perhaps what we call among us *helſinge runes*, have alſo no other origin, as the greater part of them only differ from the common runes, by having the ſtaff taken away. It is however remarkable that our gravers of runes even made uſe of this cryptography in monuments erected to the memory and honour of the deceaſed.

It is further aſked, if there are any external or internal traces of the copier having conſidered all the above-mentioned pieces, or at leaſt the three firſt parts as a connected work?

The anſwer to this may be found in the title of the book, which is at length in the Goranſon edition, and runs thus:

Bok theſſi heiter Edda. Henne hever ſam ſetta *Snorri Sturlo* ſ. epter theim hœlti, ſem her er ſhipat. En fyrſt fra Aſum ok ymi; tharnaeſt ſkalld ſkapar mal ok heiti marga hluta. Sidaz hœttartal, er *Snorri* hever ort um *Hakon* k. ok *Skula* Hertuga; that is, This book is called Edda; and has been compoſed by Snorre Sturleſon, in the manner it now ſtands, viz. firſt of the aſes and ymi, afterwards the language of poetry, and its appellations of various things. Laſtly, a diſſertation of the verſifications Snorre made upon King Hakan and Duke Skule.

I mentioned in my letter to Mr. Lagerbring, that the Rubric was written in a later hand; which is right ſo far as has been added after the Edda itſelf was begun, which may be ſeen by the narrow ſpace left for it, ſo that it has forced the copier to bring the laſt line into that immediately preceding it. Beſides, I clearly perceived that the manuſcript was very old, and that no reaſonable eye-witneſs could believe it was written in 1541, as Mr. Schloczer conjectures. But as it had been written with red ink, which had preſerved its colour better than the black, I then believed the hand had been ſomewhat younger; but as I have now very minutely compared the writing in the Rubric with that of the Edda, I think I may ſafely affirm, that they are both written by one and the ſame hand. From hence it follows, that he who copied the Edda conſidered the above-mentioned articles, and no others, as eſſential parts of it.

I am come to the principal queſtion, whether Sturleſon is the author of the Edda? Here Mr. Schloczer ſeems to have taken moſt pains, to prevent me from deceiving the learned world in this point.

Becauſe Mr. Schloczer has found that moſt antiquarians expreſs themſelves with a kind of circumſpection when they ſpeak of the Edda and its author, and inſtead of poſitively declaring Sturleſon the author, as Arngrim and ſome others have done; only ſay, Creditur, exiſtimatur auctor fuiſſe: that is, he believes the matter to be at leaſt dubious, if not totally groundleſs.

I will not inſiſt upon it, that there is at leaſt more affirmation than negation in theſe expreſſions, eſpecially as it is uſual, on mentioning an evidently falſe opinion, to add, falſo creditur, or ſomething ſimilar. For Mr. Schloczer himſelf remarks very judiciouſly,

ouſly, that the opinion of theſe men is of very little importance, when they alledge no grounds for it. He therefore believes himſelf entitled to maintain with certainty, that Sturleſon has falſely been thought the author of the Edda. To ſupport his opinion, he mentions three arguments in different places, which I muſt now examine more cloſely.

The firſt argument is to be met with in p. 39, where Mr. Schloczer ſubmits it to conſideration, whether the ſerious Snorre, overcharged with ſtate affairs, could be ſuppoſed to have had time, and did not think it beneath his dignity to write Aerarium poeticum, and become the predeceſſor of Weinreich? Here I will only obſerve, that Snorre was not conſtantly lagman, and that he might have compiled this work before he obtained this dignity, or in the interval between the firſt and ſecond adminiſtration of this conſiderable charge; and laſtly, even in its vacancies. Neither Mr. Schloczer nor I are able to determine how much time the management of a lagman's office requires. They hold ſeveral yearly court-days or aſſizes, after which I have always underſtood that they are entirely free and diſengaged; ſo that I may fairly infer that the lagmen are not troubled with the examination of tedious records, or are employed in any extraordinary works. We find many Icelandic lagmen who have been poets laureats in Sweden and Norway, as Marcus Skaggaſon, Sturle Thordarſon, and others. If Mr. Schloczer's argument was concluſive, he might go ſtill farther, and prove that Sturleſon could neither have written the Heimſkringla, or hiſtory of the northern kings, which required ten times more time, and more laborious diſquiſitions, than the Edda.

Mr. Schloczer founds his ſecond argument on his believing it incredible, that any one in the golden age of poetry in Iceland ſhould preſume to advance ſuch abſurd things as I have done in my letter. He therefore believes the Edda to be a production of later times, when poetry was in its decline in Iceland.

To underſtand the whole force of this argument, it muſt be known that Mr. Schloczer divides the Icelandic literature into three periods; the ſimpler period, from the beginning to the introduction of Chriſtianity; the golden period, from the introduction of Chriſtianity to the cloſe of the thirteenth century, when the black death or the great plague, as well as the ſubjection of the Icelanders to the crown of Norway, checked the progreſs of poetry; and the laſt, from that period to the preſent. I will not ſtrictly examine this diviſion, though I cannot comprehend that the introduction of Chriſtianity could contribute to the improvement of poetry; and ſtill leſs, if the diger-death, which raged in the middle of the fourteenth century, produced the ſame effect on the ſurviving poets, as on the cultivation of the country and its population. But this I am clear of, that any one who would attempt to claſs the Icelandic poets with any degree of certainty, muſt be perfectly well acquainted with their language, and be able to weigh the faculties of their minds againſt each other.

It ſignifies very little under what particular dynaſty the poetry of the Chineſe moſt flouriſhed, ſo long as we are able to underſtand their poems without the aſſiſtance of an interpreter.

As to the paſſages of Icelandic poets, which I have quoted in different places, they prove not a tittle of what Mr. Schloczer pretends they do. For Lopt Gutormſſon's verſes are not in the Edda; and though the other ſong is to be met with in Reſenius's edition of it, yet it is not in the Upſala manuſcript. It is therefore not known to what period they belong; and they cannot by any means be made uſe of as proofs to ſhew that Snorre was not the author of the Edda. It is highly proper to be well acquainted with a ſubject before one ventures to treat of it.

I will by no means preſume to defend all the phraſes I have made uſe of; though it is well known that cuſtom has introduced them into every language, which were they tranſlated

tranſlated into other languages, would not only loſe their original beauty, but appear aukward and graceleſs. For example, it would not be believed that to tread the ſtars under foot ſignified to be exalted and happy; nor would any one be underſtood who would, to expreſs a doubtful ſtate of mind, call it hanging water. And theſe phraſes, not to mention an infinity of others, were however in conſtant practice among the Latins.

But as to our ancient anceſtors in particular, who indubitably originated from the eaſt, they no doubt brought their allegorical expreſſions from thence. And, in my opinion, the fondneſs of the ancients for riddles did not contribute a little to theſe metaphors in ſpeech; for their merit frequently conſiſted in the moſt perverted expreſſions, which in proceſs of time were revived and admired as beauties. We are not permitted the liberty to judge without diſtinction in mere matters of taſte and genius, though they widely differ from what is practiſed in other nations.

Mr. Schloczer takes this third and laſt, and perhaps worſt argument, from the contradiction which I have obſerved between the Edda and Snorre's Heimſkringla. I wanted to ſhew in my letter, that the ancients by their Aſgard meant the town of Troy; and this I can prove, by the one having maintained the ſame things of Aſgard as the other does of Troy. My opinion therefore is, that Troy and Aſgard muſt neceſſarily ſignify one and the ſame place, unleſs we admit that Sturleſon has contradicted himſelf. It may be eaſily apprehended, that what I have mentioned by no means implies that there was a contradiction between the Edda and Heimſkringla, but only that the above cited place had been called by two different names. Mr. Schloczer cannot poſſibly be ignorant of the meaning of argumentationes ab abſurdo.

Hitherto I have mentioned the arguments with which Mr. Schloczer endeavours to ſhew, that Sturleſon is not the author of the Edda; but now to prove the contrary on my ſide, I will content myſelf with one ſingle argument, which is of ſuch a nature as to make all other unneceſſary. In the ſuperſcription ſubjoined to our Codex, the copier roundly affirms Sturleſon to be the author of this work; and his teſtimony is ſo much the more undeniable, as the nature of the copy itſelf proves, that it cannot be later than the fourteenth century; and that an Icelander had made it on the ſpot, who certainly would not have thought it worth his attention and time to copy a work, if he had not known the author of it. That this was the general opinion of the Icelanders, I think, may be proved thus; that though various conjectures are generally made concerning the author of an anonymous work, there are hardly any except Sturleſon mentioned as the author of the Edda.

I cannot on this occaſion paſs over in ſilence what I have read in p. 326 of the Daniſh Journal, which Mr. Lilie publiſhed in 1756; namely, that the celebrated Arnas Magnaus, in a written account left us by Sumundr Trode, was of the ſame opinion as Mr. Schloczer, that Sturleſon was not the author of the Edda.

The arguments which he makes uſe of ſeem to carry ſome weight with them; that in the laſt part of the Edda, called *Liodſgreinir* or *Skàllda*, Sturleſon is not only quoted, but alſo recommended as a pattern to the poets; and that in this part mention is likewiſe made of the kings Hakan Hakanſon, Magnus, Erich, and Hakan Magnuſſon, who all lived later than Snorre. This argument at firſt ſight ſeems to be deciſive, but loſes its whole force upon a nearer examination. The true ſtate of matter is this:

In the beginning of *Liodſgreinir* the author of the Edda ſays, that he has three different heads to treat upon; viz. the rules of poetry, its licences (licentia peotica), and its faults (vitia carminum) *ſettning*, *leiſe*, and *ſyrerbodning*. The two firſt of theſe ſubjects are perfectly diſcuſſed in the Liodſgreinir, but the laſt is wanting. A later writer has attempted

attempted to make up this deficiency, and has therefore made a ſupplement to Sturleſon's Edda. It is not in the leaſt extraordinary that he ſhould have mentioned Sturleſon, and given him his merited ſhare of praiſe; but that this ſupplement does not belong to the genuine Edda, is proved by the Upſala manuſcript, where it is entirely wanting.

In this manner it may be explained what is ſaid of the late kings: they are never mentioned in the Edda; and I am much miſtaken if Arnas Magnaus has not taken them from the *Skaldetal*, or liſt of poets, where they are all taken notice of. This *Skaldetal* was no more than a ſupplement to the Edda, as I ſhall make appear preſently. If therfore the learned Magnaus had ever ſeen our codex, he certainly would not have entertained this opinion.

In regard to theſe appendixes, I am perfectly convinced that the catalogue of *Lagmen* and the *Langfedgetal*, or genealogy, are the works of Sturleſon himſelf. The ſubject contained in them refers entirely to Snorre, who was both lagman and a deſcendant of the Sturlunga family. The *Aettartal*, or genealogical table, which from the beginning deſcends in a ſtrait line from the fathers' and mothers' ſide to the ſons, at Sturle extends to all the children, and daughters' children; yet in ſome inſtances even there not to all theſe, but moſt probably to thoſe only who were alive when this genealogical table was compoſed. The ſame is to be obſerved in the catalogue of the Lagmen, where it is very accurately mentioned how long every one of them poſſeſſed their place: but at the family of Snorre the catalogue ſtops, without obſerving how long they maintained this charge the laſt time. It is therefore impoſſible that this genealogy ſhould have been compoſed before Snorre's time; nor is it leſs improbable that any one ſhould have omitted, in later times, to add the ſixteen years during which Snorre was lagman the laſt time; or that he ſhould have forgot to mention this circumſtance of him in the whole liſt of lagmen, who was the moſt conſiderable of them all.

I will in this place add, that it was very common, not only in the north, but even in other parts, to ſubjoin ſuch liſts, genealogical tables, and the like, to larger works, in order to reſcue them from oblivion, and prevent their being totally loſt to poſterity. In the ſame manner the copier of our Weſt Gothic law had added to it a *Konunga Längd*, or liſt of kings, as likewiſe a liſt of the biſhops of Skara and Langmanner in Weſtgothland. Are Frode has in like manner affixed his genealogy to his Schedis, or *Iſlandiga bok*, and ſeveral others.

It is more difficult to determine ſomething concluſive concerning the third appendix, or *Skaldetal*. I have always been of opinion, that it was begun by Snorre, as it commonly follows the Edda, and that it was afterwards augmented by one or more perſons; Vormius did the ſame by a poem written by Saxo Hiærne, who obtained by that compoſition the regal dignity in Denmark, though as a Dane he was not properly intitled to be placed in the liſt of Icelandic poets.

That this catalogue was the work of ſeveral hands may, in my opinion, be perceived by more than one indication: immediately in the beginning it is ſaid, that Starkotter was the firſt of the ſkalds, whoſe verſes the people had learned by heart; and in the end a certain *Ulfver hin Oarge* is cited as the firſt, who, according to Mr. Schoning, lived in the ſecond century, and conſequently muſt have been ſeveral centuries older than the above-mentioned Starkotter. Theſe two accounts can hardly be ſuppoſed to proceed from one and the ſame author.

It is beſides incontrovertible, that what is ſaid of the laſt Norwegian kings correſponds not with the time of Snorre. It would be of eſſential ſervice if a man of Mr. Suhm's merit and abilities would critically examine this Skaldatal, and compare it with Vormius's liſt of poets, which differs ſo widely from it in ſeveral points.

The

This at leaſt may be perceived by every one, that the ſkalds therein mentioned have not all lived in the thirteenth century; but that a great part of them exiſted in the tenth, eleventh, and twelfth centuries. The two hundred and thirty ſkalds, who, according to Mr. Schloczer's reckoning, lived in the thirteenth century, may be conſiderably reduced in number, by one and the ſame ſkald being mentioned in three or four different places, as if he had been in the ſervice of as many maſters. It is very remarkable that ſome of theſe ſkalds, as Oltar Svarte, Sigvatur Thordarſon, and others, have been received as poets laureat in all the three northern courts.

Nor is it leſs remarkable, that ſome of theſe Icelandic ſkalds were taken into pay at the Engliſh court, by kings Athelſtan and Etheldred: this would require an examination to diſcover how their *Skaldſkaparmal*, or poetical language, could be underſtood in a foreign country, as both languages, without theſe poetical figures, differ ſo widely from each other, as is evident from the remains of both.

It is laſtly aſked, if there are any internal or external marks, from which it might be gueſſed that the three parts of the Edda mentioned by me belong together, and form one work? But this queſtion is anſwered by the title quoted above, wherein all the parts are clearly enumerated.

In regard to the third part, called *Liodſgreinir*, Mr. Schloczer deſires to know how this title ſuits to an ars poetica?

I have already in ſome meaſure anſwered this queſtion in my letter to Mr. Lagerbring, by citing the ſtrange titles the ancients ſometimes prefixed to their books. However, that a clearer idea may be formed of what relates to this appellation, it ſhould be obſerved, that Sturleſon immediately in the beginning divides all ſounds or tones into three kinds. The firſt he calls *vittlaus hliod*, or the ſound of inanimate things, as of thunder, waves, wind, and the like; to the ſecond he reckons the ſounds of irrational animals; and to the laſt, the articular ſounds of men, which are produced by means of the tongue, the palate, &c. He then ſpeaks of the ſound of the letters, how ſome are long, others ſhort; ſome conſonants, and others vowels and diphthongs: he then proceeds to the rules of proſody, and whatever elſe belongs to the Icelandic *ſkaldſkap* or poetry.

From hence it may be ſeen what has given riſe to this appellation; *Liodſgreinir* literally ſignifying no more than diſtinction of ſounds. Sturleſon has given as ſtrange a title to this northern hiſtory, which he calls *heimſkringla*; and this from no other reaſon, but becauſe it was the firſt word with which the book began.

LETTER XXIV.—FROM CHEVALIER BACK TO DR. TROIL.

Of the Icelandic Scurvy.

SIR, Stockholm, June 12, 1776.

THE accounts with which you have favoured us of the diſeaſes which moſtly abound in Iceland muſt be of univerſal ſervice to the Swedes. When I had the pleaſure and happineſs of converſing with you on this ſubject, my attention was peculiarly raiſed by the information you gave me of the Icelandic ſcurvy, and of its dreadful conſequences on thoſe perſons who were affected with it.

What Mr. Peterſen calls the Icelandic ſcurvy, is the true elephantiaſis, which is nearly related to the leproſy. Celſus has deſcribed it in the days of Auguſtus under the name of elephantiaſis; and yet Aretæus has treated more fully upon it, in ſect. 5, under the ſame name. It is more terrible than any other diſeaſe, producing frequently a dread-

ful end: it gives a diſguſting appearance to the patient, as the body by its colour, roughneſs, and ſcaly appearance, reſembles the ſkin of an elephant. Whoever compares your deſcription and Mr. Peterſen's of this diſeaſe with that of the ancients, will not find it an eaſy matter to take the Icelandic ſcurvy for any thing elſe but the elephantiaſis. In my opinion, both Ettmuller and Boerhaave, and his famous commentator baron van Swieten, would have done better not to call the elephantiaſis the higheſt degree of the ſcurvy; or if they had not confounded theſe two diſeaſes, ſo different in their beginning, progreſs, nature, and remedies.

Thoſe among us who have written of the theory of diſeaſes, have with more propriety given the name of ſcurvy where a gradual increaſing languor takes place, together with a bleeding, ſtinking and putrid breath, and many coloured blackiſh blue ſpots on the body, particularly round the roots of the hair, and which principally proceeds from corrupted ſalt animal food, and the want of vegetables. The elephantiaſis, on the other hand, which is alſo called *Lepra Arabum*, is rather an hereditary diſeaſe; the ſkin becomes thick, unequal, gloſſy, and loſes its ſmoothneſs; the hair falls off, languor and want of feeling take place in the extremities: the face becomes diſguſting and full of biles, and the patient gets a hoarſe naſal voice. In the real leproſy (impetigo, lepra Græcorum) the ſkin becomes wrinkled and full of ſcales, which ſeem to be ſtrewed with bran, often burſt, itch exceedingly, and are filled with a watery moiſture.

Mr. Sauvage mentions ſeveral ſorts of elephantiaſis; but it is a queſtion whether they all differ or not, as he might have multiplied their number. I believe that the elephantiaſis mentioned by Cleger in his Eph. Nat. Curioſ. and Sauvage's Javaneſe elephantiaſis are very like the Icelandic. At leaſt, it is certain that the elephantiaſis in Madeira, which Dr. Thomas Heberden deſcribes in the firſt volume of his Medical Tranſactions, almoſt one hundred years after Cleger, is entirely the ſame.

It is very remarkable that this diſeaſe has preſerved its nature ſo perfectly in the moſt northern parts during more than a hundred years, and remained entirely ſimilar to that in the hotteſt climates. It appears the ſame diſeaſe, at Martigues in Provence, has been deſcribed by Dr. Johannes in the firſt volume of the Medical Obſervations and Inquiries; and that it has been in the Ferro Iſlands, may be ſeen in the firſt volume of Bartholin's Actis Hafn.

The diſeaſe obſerved in Norway, which Mr. Anthony Rob. Martin deſcribes in the Tranſactions of the Swediſh Royal Academy of Sciences, in the latter end of the year 1760, may likewiſe be reckoned amongſt this claſs; as alſo that which appeared in ſeveral parts of Sweden, and of which Mr. Aſſeſſor Odhelius gives an account in the third part of theſe Tranſactions for the year 1774; all theſe may very properly be compared to Mr. Sauvage's Elephantiaſis Legitima.

It was believed in the moſt early times, that this diſeaſe had taken its riſe in Egypt; but Lucretius poſitively ſays, that it was firſt diſcovered on the banks of the Nile. In Celſus's time it was not at all known in Italy; but Pliny relates, that it was firſt brought into that country by an army of Pompey, from Egypt and Syria, but did not remain there long. In the twelfth century it was brought to Europe the ſecond time by the cruſaders, and is frequently mentioned in the publications of the thirteenth, fourteenth, and fifteenth centuries: it was not however very violent in the fifteenth and ſixteenth centuries; and in the ſeventeenth century it ſeems to have entirely diſappeared in England, France, and Italy, when all the lazar-houſes, which had been built on purpoſe to receive patients infected with this diſeaſe, became uſeleſs.

But

But how did this dreadful diſeaſe come from the ſouth, where the diſeaſes connected with an irruption are moſt frequent, ſo far to the north? Could it not alſo have happened by means of the cruſades, our forefathers in the north having had likewiſe the honour to partake of them? nay, even the Icelanders were not excluded from a ſhare. The oldeſt Iceland writings give us examples of the elephantiaſis in Norway, and other northern countries, as may be ſeen in the firſt volume of Olafsen's Voyage to Iceland, page 172. But it ſtill remains a query, whether it was the true ſcurvy or not, which the learned author found mentioned for the firſt time, under the ancient Norway and Icelandic name of *ſkyrbjugur*, that appeared in the Norway fleet, in the year 1289, during the war of king Ehrick with Denmark. For, according to Mr. Peterſen's teſtimony, the word *ſkyrbjugur* is to this day frequently made uſe of to expreſs the elephantiaſis; though I muſt confeſs that the ſcurvy ſeems to be a common diſeaſe among the fleets in thoſe days as well as in ours. However it would be uſeful for the hiſtory of the diſeaſes common in the north, if the origin of them could be determined from theſe old accounts, eſpecially as theſe accounts of the ſcurvy are two hundred years older than any we have yet been able to diſcover. We may moſt probably expect this diſcovery from our neighbours in Denmark and Norway, who elucidate the northern hiſtory from ancient accounts with ſo much zeal and happy ſucceſs.

Mr. Anthony Rob. Martin relates, that in the above-mentioned place the number of perſons in Norway infected with this diſeaſe, in the year 1759, amounted to one hundred and fifty, for whom three hoſpitals were erected; and Mr. Peterſen fixes the number of thoſe who were ill of it in Iceland in the year 1762, at two hundred and eighty perſons, for whom four hoſpitals were eſtabliſhed.

You may aſk, Sir, how this diſeaſe came to be ſo firmly rooted in Iceland, as it has ſo decreaſed in the ſouth, that it has almoſt diſappeared there?

I believe that this is not ſo much owing to the climate as to the manner of life and diet. People whoſe continual occupation is fiſhing, are night and day expoſed to wet and cold, frequently feed upon corrupted rotten fiſh, fiſh livers and roe, fat and train of whales, and ſea-dogs; as likewiſe congealed and ſtale ſour milk: they often wear wet clothes, and are commonly expoſed to all the hardſhips of poverty. The greater number of theſe are therefore to be met with in this claſs: on the contrary, where leſs fiſh and ſour whey are eaten, and more Icelandic moſs (lichen Iſlandicus) and other vegetables, this diſeaſe is not ſo prevalent, according to an obſervation made by Mr. Peterſen in the above-mentioned Tranſactions.

We have a very remarkable inſtance of the great effects of diet on the diſeaſes of a nation, in the inhabitants of the iſle of Ferro. Since fiſhing has declined among them, and the inhabitants have cultivated corn, and live upon other food inſtead of whale's fleſh and bacon, the elephantiaſis has entirely ceaſed among them, according to Mr. Peterſen's account. Things bore a very different aſpect there ten years before this alteration: as a proof, I will quote Mr. Debe's own words from the firſt volume of the Act. Hafn. pag. 98. Elephantiaſis in inſulis Ferröenſibus frequens ex victu et aëre, has habet notas; facies et artus hic fere ubique foedantur tumoribus plumbei coloris, qui exulcerantur foedum in modum. Rauci ſunt hoc morbo infecti, et per nares vocem emittentes. Vere et autumno invaleſcens morbus plurimos enecat.

Experience likewiſe teaches us, that the greater number of perſons labouring under this diſorder in our country reſide near the ſea-ſhore, in the diſtricts of Abo and Oeſterbottn, and in the iſles ſcattered round the ſhore, who in general get their livelihood by fiſhing and catching ſea-dogs: from what has been ſaid before it may be learnt,

what is proper to be done gradually to remove this deſtructive diſeaſe. But I will reſerve for another occaſion, whatever relates to this diſeaſe in Sweden.

About a hundred years ago plagues and peſtilential fevers raged in Europe, as may be ſeen in the accounts of ſeveral phyſicians of the epidemical fevers which prevailed at certain times. But at preſent, when a better police has procured us more cleanlineſs in the ſtreets and narrow lanes; and more neatneſs is obſerved in our apparel and habitations; as alſo ſince beer prepared with hops, wines, and other liquors are drank, which are very ſalutary, though they produce other diſeaſes when made uſe of in exceſs; ſince fruits and vegetables, tea and ſugar, are become faſhionable; theſe and ſimilar diſorders are greatly diminiſhed. Sir John Pringle proves the truth of theſe remarks, accompanied with ſeveral examples, particularly with reſpect to the diſeaſes of England, in his Obſervations of the Diſeaſes of an Army.

It is very probable that the elephantiaſis, and many other great diſorders in the ſkin, quitted the ſouthern countries from ſimilar cauſes; and have on the contrary maintained themſelves towards the north, where a ſufficient quantity of bread cannot be provided for the natives, and where the lower ſort of people, who live entirely by fiſhing, do not eat any vegetable food, but only feed upon rancid oily victuals; and are beſides unable to keep themſelves clean and neat, being continually expoſed to wet and cold on the ſea-ſhore, &c.

I ſhould repeat the obſervations which have been made upon this diſeaſe in Iceland, as they might perhaps ſerve to make our countrymen better acquainted with the diſorder itſelf, and the manner of curing it. But you, Sir, might perhaps tell me, that this is a more proper ſubject for a phyſical book than for letters concerning Iceland; for which reaſon I will be as conciſe as poſſible.

Mr. Anthony Rob. Martin has given ſo exact an account of this diſeaſe, that I need not here enumerate its ſymptoms. Whoever compares it with Mr. Peterſen's little diſſertation, will become perfectly acquainted with the elephantiaſis, its beginning, progreſs, and greateſt height; and will readily allow, that the Icelandic name of *liktraa* is given it with great propriety, which ſignifies, that thoſe who are infected with this diſeaſe in its higheſt degree, reſemble a putrefying corpſe more than a living man.

The elephantiaſis is either inherited from the father or mother, who are afflicted with it, or it is not inherited. In the firſt caſe, the diſeaſe frequently appears before the child is two years old, and always before the age of twenty-five, ſo that ſuch perſons ſeldom live to ſee thirty years. The ſooner the diſeaſe makes its appearance, the ſooner the patient becomes a prey to death. But thoſe who have not inherited the elephantiaſis, but have brought it upon themſelves, by their mode of living and other cauſes, may drag on a wretched exiſtence during twelve or fourteen years, and ſometimes longer. The elephantiaſis is of the ſame nature in the South.

Before this diſeaſe breaks out on any perſon, his breath is diſagreeable and ſtinking for three, and ſometimes ſix years preceding: he has a great appetite to eat ſour, half-rotten, and unwholeſome food; is always thirſty, and drinks very much: ſome are ſlothful and ſleepy, and when aſleep are with difficulty awakened; are ſhort-breathed when the complaint aſcends upwards; they ſpit very much, and complain of wearineſs in their knees. They ſhiver violently when they come out of a cold room into the open air; the eyes and lips become of a brown and blue colour: they have a weak ſmell: with ſome the feeling is likewiſe numbed; others have weak ſight; and ſome loſe it entirely, when their foreheads begin to ſwell in the beginning of the diſeaſe. They have frequently thin hair, particularly on the eye-brows; the beard likewiſe grows very thin

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on both ſides of the chin, and the ſkin becomes gloſſy, as if it had been rubbed over with greaſe.

This diſeaſe is not found to be particularly infectious in Iceland: as a huſband afflicted with it does not infect his wife, nor a diſeaſed wife her huſband. The children may likewiſe be brought up without danger in the houſe of their diſeaſed parents. But it has been found by experience, that when one of the parents is infected with it, ſome one or other of the children always catch it. It is the ſame thing in Madeira, as Dr. Heberden obſerves. Dr. Johannes informs us that at Martigues in Provence, when one of the parents has the diſeaſe, one of the children or grand children, or a deſcendant in the third degree, is certainly infected with it; but in the fourth degree it again diſappears, and only ſhews itſelf in a bad breath, hollow teeth, ſwelled throat, and a darker colour than uſual.

The more ancient writers who have treated of this diſeaſe, frequently relate, that people were even afraid of being infected by converſing with thoſe who were troubled with it. The diſeaſe muſt therefore either have been more violent in the beginning, and in the ſouthern countries, as the venereal diſeaſes were formerly in the beginning of the infection; or the diſeaſe having but lately made its appearance, cauſed more apprehenſions. It is, however, always adviſeable to be cautious in converſing with ſuch patients, and neither to wear their ſhoes or cloaths, when they have been rendered wet with ſweating. When the diſeaſe is arrived at ſo high a pitch that the matter which flows from the ſkin is corroſive, and eats into the fleſh, it can no longer be denied, but that it then becomes infectious, and even dangerous to converſe too near with the patient.

As the elephantiaſis, when it has attained its greateſt height, is incurable, according to the teſtimony of ancient and modern phyſicians; it is ſo much the more neceſſary to notice the beginning of the diſeaſe, and the time preceding it, in order to prevent the danger.

A patient who finds himſelf in theſe circumſtances, or lives in a place where the diſeaſe is rife, or has any other cauſe to believe that he has the leaſt veſtige of it exiſting in his body, either by inheritance, or through his own fault, ſhould, both in his diet and in his whole manner of life, avoid whatever is likely to contribute to it, or render his body more liable to receive the infection, with the utmoſt caution. He muſt keep himſelf extremely clean; immediately put on dry cloaths, whenever thoſe on his back become wet; eat no other food but what is eaſily digeſted, and abſtain from all oily rancid whale's fleſh, and the like. He muſt eat no half-rotten fiſh; nor their inteſtines and livers, eſpecially if they are in a putrid ſtate: on the contrary, he muſt confine himſelf to bread, roots, green herbs, cabbages, turnips, and ſalad of gentiana, campeſtris, ſorrel (rumex acetoſa, L.) rumex criſpus, &c. &c. He muſt eat ſoups, boiled freſh meat, with ſcurvy-graſs, ſedum acre, and the like. He muſt make uſe of baths of the decoction of juniper, dry baths of juniper, &c. &c. In the ſame manner antimonial remedies would be very uſeful; and even Swieten's mineral mixtures, pills of an extract of hemlock (pilulae alterantes Plumiris), and ledum paluſtre. I have likewiſe obſerved with pleaſure, that a girl in the pariſh of Weſter Hannings, was cured of a commencing elephantiaſis in the year 1774, by making uſe, during a long time, of Huxham's antimonial eſſence, with a decoction of antiſcorbutic herbs.

But every one will eaſily apprehend, that poor wretched people, who are naturally moſt expoſed to theſe and the like diſeaſes, are likewiſe entirely incapable of averting them by obſerving a proper diet and manner of life, which are, however, almoſt the only remedies. Beſides, theſe kind of people are generally careleſs of any illneſs ſo long

long as they are able to ſtir; they likewiſe ſeldom conſult a phyſician, and when they do, it is out of their power to follow his preſcriptions exactly. Some perſons attacked with it have, however, been freed of it, after having had the ſmall-pox. It might, therefore be conjectured, that patients afflicted with the elephantiaſis, if they had not had the ſmall-pox, would be benefited by inoculation.

Some who have had this dreadful diſeaſe have gone from Iceland to Copenhagen, where they have happily experienced a cure. I will likewiſe mention, in juſtice to Dr. Thomas Heberden, that he is the only phyſician known to have cured the elephantiaſis, after it had attained a very high degree. His manner of cure is this: he firſt mixes an ounce and an half of powder of bark, with half an ounce of ſaſſafras root, and then adds as much ſimple ſyrup as is neceſſary to make the whole into an electuary; of which he gives the patient two portions a day, of the ſize of a nutmeg: he cauſes the hands and feet to be rubbed morning and evening with a mixture, conſiſting of eight ounces of brandy, an ounce of lye of tartar, and two ounces of ſpirit of ſal armoniack. He laſtly cauſes bliſters to be conſtantly laid between the ſhoulders. This method regularly purſued ſucceeded in the courſe of five months, after he had before made uſe of antimony, mercury, and the like, during the full period of ſeven years, without any laſting amendment. But I have already ſaid too much of this loathſome diſeaſe.

Sed quænam medela excogitari peterit, quæ elephantem tam ingens malum expugnare digna ſit? *Aretæus.*

LETTER XXV.—FROM PROFESSOR BERGMAN TO DR. TROIL.

Of the Effects of Fire, both at the Volcanos and the Hot Springs; and alſo of the Baſalts.

SIR, Stockholm, June 12, 1776.

You have been ſo kind as to communicate to me your obſervations on Staffa and Iceland, and to deſire my opinion of their natural curioſities. It would be very ungrateful if I heſitated to comply with this requeſt, as you preſented me with the intire collections you made there, that I might chemically examine the nature of each. Mere obſervations, without the aſſiſtance of an exact knowledge of the ſubſtances, in reſpect to their original matter and compoſition, inſtead of affording any ſufficient lights whereby to enable us to determine with certainty of them, would only lead us to draw very erroneous concluſions. Though the form, grain, colour, hardneſs, poſition, and external appearances may aſſiſt us in our conjectures of the true nature of minerals, and ſometimes of the manner in which they are produced, yet we muſt nevertheleſs remain in uncertainty, till proper experiments guide us to a more clear deciſion.

Forgive me for mentioning the concluſions, which, in my opinion, might be drawn from your obſervations regarding the internal nature of theſe ſubſtances, ſo far as I have been able to diſcover them from actual experiments. But you muſt by no means expect a ſolution of all the difficulties that ariſe on this intricate buſineſs. I will cautiouſly endeavour to ſeparate what is certain, from what has been hitherto conſidered precarious and doubtful; a due regard to truth will always prevent me from offering mere conjectures, or even credible opinions, with a peremptory deciſion, as incontrovertible arguments. Experience has taught us that we ought to judge of the works of nature with the utmoſt diffidence; and we do not want examples, even from the remoteſt times, of perſons who have pretended to explain, with the moſt poſitive certainty, not only how our earth, but even how the whole world received its preſent form, and even its very origin. To determine the contrivance of ſo vaſt a machine over a writing-deſk, is indeed

indeed one of the moſt daring enterprizes which the proud reaſon of man ever propoſed to itſelf; and, more than any other attempt, ſhews his weakneſs and arrogance. All theſe imaginary ſyſtems have been by little and little overturned, though the greateſt pains were exerted to compare them with nature, and examine their exiſtence. Their arguments were then diſcovered to be founded on a few inſufficient obſervations, or, what is ſtill worſe, on uncertain, and ſometimes evidently falſe principles.

You, Sir, will therefore readily excuſe my timidity; for inſtead of endeavouring to diſcover all at once, as it were à priori, though without any certainty, the manner in which nature works, and forms things in ſecret, I prefer the more laborious method of diſcovering it gradually with certainty, by experiments founded on due obſervations; and ſhall not heſitate to confeſs my ignorance, wherever theſe guides in the ſtudy of nature ceaſe their inſtructions. I do not, however, reject all conjectures and propoſed opinions, whenever they lead to new reſearches, provided they are offered as mere conjectures, and not obtruded on us as certain truths, or determined opinions.

From what I have hitherto ſaid, you will, I believe, conceive my method; therefore I ſhall enter upon the ſubject, and briefly treat of it under ſeparate heads, in the following manner.

Of the Hot Springs.

YOUR deſcription of the Icelandic ſprings, the moſt extraordinary which have hitherto been diſcovered in the known world, was extremely agreeable to me, partly on account of the ſurprizing force of them, and partly on account of the great light obtained in mineralogy by the cruſtated ſtones formed in them. How theſe ſprings may be accounted for, I hope I have ſufficiently explained in another place *; I ſhall, therefore, entirely paſs it over here. But now I will communicate to you what I could not then underſtand, namely, the true nature of theſe depoſitions.

You have preſented me with the following ſubſtances from the Geyſer:

1. The ſubſtance of which the water has prepared itſelf a baſon to run from.—It conſiſts of a hard, rough, greyiſh, and irregular ſlaty, and generally martial cruſtated ſtone, over which a covering of ſmall cryſtallizations has formed itſelf, that reſembles the lichen fruticuloſus, or rather the Stahlſteindruſe found in the Weſterſilverberg; that is called the flos ferri or Eiſen bluthe. Theſe precipitations are opaque, without of a whitiſh grey, blacker within, and plainly ſhew the formation of ſeveral cruſts on one another. Each of theſe flos ferri, as well as the cruſtated ſtone, has the hardneſs of a flint; however they are not ſo compact or ſtrong as to ſtrike fire with the ſteel.

The ſtrongeſt acids, the fluor acid not excepted, are not ſufficient with a boiling heat to diſſolve this ſubſtance. It diſſolves very little if at all by the blow-pipe with the fuſible alcali, a little more with borax, and makes a ſtrong efferveſcence with ſal ſodæ. Theſe effects are peculiar only to a ſiliceous earth, and therefore there remains no doubt concerning the real nature of this cruſtated ſtone. Nevertheleſs, I have melted it in the crucible; firſt, by weight, with half as much alcaline ſalt, and likewiſe with three times as much; and have obtained in the firſt caſe a fixed glaſs, and in the ſecond one, which in diſſolving, yielded a common liquor ſilicum. The glaſs of the cruſtated ſtone is of a more yellowiſh brown than that of the cryſtallizations; and this difference is cauſed by the greater quantity of irony particles.

2. The porous cruſtated ſtone or ſinter, which is found in the moor ſurrounding the border of the baſon, is light, whitiſh, and here and there ſpotted with a ruſt colour: it

* In my Phyſika beſkriſning om Jordklotet, ult. edit.

is evidently an incruſtation upon moſs and ſimilar ſubſtances, which have been decayed by length of time, and left thoſe cavities. In regard to its compoſition, it is of a ſiliceous nature as the preceding, and alſo perfectly ſimilar in reſpect to fire and diſſolvents.

I have already mentioned the ſolution of the flint in ſal ſodæ with the blow-pipe; and as I ſhall hereafter have frequent occaſion to refer to it, I will in this place relate the whole proceſs. The late director of the mines (*bergmaſtare*), Mr. Cronſtedt, makes mention of this ſalt in his Mineralogy, but it is very ſeldom; and he conſiders it as leſs proper for uſing with the blow-pipe, becauſe it is too ſoon imbibed by the coals. It certainly does not afford a very good ſolution upon coals, and I therefore made uſe of a ſilver ſpoon, made on purpoſe; by which method I have been able to make good uſe of the ſal ſodæ, which in his examinations of the different kinds of earth in this manner, is very ſerviceable, and even indiſpenſably neceſſary, as I ſhall hereafter prove more at large, in a little diſſertation on the blow-pipe, and its proper uſe.

I have frequently inſerted a ſuppoſition in my printed works, that though the ſiliceous earth cannot be diſſolved in the uſual manner in water, yet it might with the help of a great degree of heat; and that this really happened at Geyſer, is evidently proved by the above deſcribed cruſtated ſtone. The hot water forms of itſelf the large ſiliceous baſon from which it iſſues out of the ſubſtance, that is in a diſſolved ſtate at the firſt, but quickly precipitates on account of the heat decreaſing in the open air. The heat of the water was not examined with the thermometer, till ſuch time that the baſon was filled, when it was nevertheleſs found at a hundred degrees, according to the Swediſh meaſure. It is in all probability much greater under the earth; for its running through cooler channels, and its ſpouting afterwards into the air to a great height, muſt neceſſarily very much diminiſh the heat on account of the great diſperſion.

This quick depoſition produces both the opacity and irregular form of this ſtone, and prevents the particles from being ſo cloſely united, as might have been expected from the degree of the hardneſs of each, ſuppoſing the ſolvent power had diminiſhed more gradually.

Mr. Scheele has diſcovered the formation of the flint; and I myſelf have found out, within theſe two years, a method of obtaining, with the help of ſome fluor acid, thirteen precipitated cryſtals of the ſize of ſmall peas. This artificial pebble in all experiments, both in the wet and dry method, and even in the focus of a burning-glaſs, in a piece that I ſent to Mr. Macquer, diſcovered exactly to him the ſame qualities as the natural one.

All theſe circumſtances, therefore, prove that the pebble is a ſaline earth, which is compoſed of fluor acid, and an original ſubſtance exiſting in the watry exhalations. It is not quite ſimple; but however I have not been able to conſider it as any other than an elementary earth: indeed my judgment is, that it cannot be compounded from any other principle.

I do not in this place mean a finer or coarſer powder, by the denomination of earth, as is generally underſtood under this appellation; but I take the word in a chemical ſenſe, to expreſs a fixed principle, which is obtained in analyſing any ſubſtance, and that cannot be diſſolved in boiling water, after the niceſt mechanical diviſion. It is well known that the diſſolubility of any ſubſtance may be leſſened by certain compoſitions; and that a ſolvent can better attack the ſubſtance, according to the extent of its ſurface; and that laſtly, water in an open veſſel will not admit of any greater degree of heat than one hundred degrees, according to the Swediſh thermometer. A ſubſtance may, by this rule, be diſſoluble by itſelf, after having gone through a preparatory cleanſing, or a chemical ſeparation, or with the aſſiſtance of a greater degree of heat, though it may be indiſſoluble without any preparation, or with the uſual method of boiling; and it is with a view to this circumſtance that I call the flint a kind of ſalt earth.

I have likewiſe examined the ſubſtances you collected in the moraſs near the Geyſer, and have found them to be the following:

3. A dark-red bole, which became darker in the fire, but was afterwards a little attracted by the magnet. It crumbled into pieces in the water, and is fine and tough to the touch.

4. A bluiſh-gray clay, which contains green vitriol of decayed pyritæ.

5. A brighter grey ſort, which did not ſeem to contain any vitriol.

6. A white or yellowiſh clay, with ruſt-ſpots.

All theſe ſorts become very hard in the fire, and take a good deal of time before they liquify. The laſt, when it ſoftens, is harſh and more ſandy to the touch than the preceding ſorts.

The different ſorts of ſtone collected at Laugarnas are of another nature: nor does the water here ſpout out of a baſon, but through many ſmall openings in the earth.

7. A whitiſh irregular plated cruſt, which often grows on the outſide into ſmall globular blunt points. This in acids gives a ſudden fermentation, that immediately ceaſes without its being any otherwiſe attacked. It diſſolves with borax by the blow-pipe with great difficulty, and without motion, but with a loud efferveſcence with ſal ſodæ. It is conſequently a ſiliceous maſs outwardly covered with lime, and has fixed itſelf on the following ſubſtance.

8. A ſolid irregular plated and broken cruſt, of a dark colour, but in many places tinged with bright blue ſpots. It becomes quite ſmooth in cutting, almoſt like ſtone marle, but does not crumble in water, nor does it become ſoft in it; with acid it ſhews an efferveſcence which ſoon ceaſes; with the blow-pipe it grows hard, ſcarcely melts at the thinneſt edges, and is attacked with ſome motion both by borax and fuſible urinous ſalt and ſal ſodæ, but is not entirely diſſolved by any of them.

9. The ſubſtance found at the bottom of the brook, which carries off the water that guſhes out, is brown, ſpongy, and compoſed of pretty hard flakes and threads, that are covered with fine glaſſy cryſtallizations. Theſe are clear only in ſome few places; but loſe their brown colour, both in fire and marine acid, and become quite clear.

The ſmall cryſtals puff up very much under the blow-pipe, almoſt like borax; they float in bubbles on the ſurface, and are diſſolved with great difficulty by borax; they are attacked by ſal ſodæ with a ſtrong ebullition: it is the ſame with the more ſolid flakes, but they do not puff up ſo ſtrongly as the cryſtallization. Theſe ſeveral qualities here mentioned evidently ſhew, that this cruſtated ſtone conſiſts of zeolite.

10. From Reykum you ſent me calcareous ſpar in lumps, that are externally rounded, as if they had been toſſed backwards and forwards by the water, and rubbed againſt hard bodies. In them there are ſmall greyiſh green cryſtallizations, that diſſolve by the blow-pipe to a black flag; the ſal ſodæ cauſes ſome efferveſcence in them, but does not diſſolve them; they are likewiſe attacked with ſome emotion by fuſible urinous ſalt.

11. A looſe, tubuloſe, whitiſh cruſtated ſtone, or an incruſtation cavernous, and with impreſſions of leaves, ſtalks, and the like. As to its nature it is ſiliceous; but ſeems at the ſame time to contain a different ſubſtance, as it diſſolves more ſlowly with ſal ſodæ.

The ſpring which here burſts forth in a very ſloping direction towards the horizon, according to your account, depoſits a kind of ſulphureous greaſe by its hot ſteam on the cavities of the upper ſide; but I have found no ſpecimen of this in the collection you communicated to me.

From what I have hitherto ſaid, we may gather, that the Icelandic hot ſprings contain very different ſubſtances from what are to be met with in other places of the ſame ſort, eſpecially ſiliceous earth.

There is no lime at all near the Geyſer; but at Laugarnas there are ſome faint traces of it, partly as an external covering, and partly as conſtituent parts in the zeolite, of which more will be ſaid hereafter. The balls of lime found at Reykum are moſt probably thrown out by the ſpring, and have been rounded on the ſurface by the friction.

Of the Eruptions of Fire.

I HAVE in another * place treated pretty extenſively of the dreadful devaſtations cauſed by ſubterraneous fires on the ſurface of the earth in many parts of the world, both in regard to their cauſes and effects; I have therefore not any thing to add in this place but what particularly relates to Iceland, and what may ſerve to explain the eruptions which have happened there from time to time.

Whether Iceland is to be conſidered as entirely produced by volcanos, is a queſtion which moſt probably will remain unreſolved many years. It is true, Sir, that according to the accounts you have collected there, the volcanos have raged in a great many places, and that the whole country is in a manner covered with traces of their deſtructive effects: we alſo learn, from undeniable facts, that new iſlands have been produced by volcanos in many places. But all this proves not any thing more than that the moſt dreadful effects have been produced by fiery eruptions in Iceland.

To determine this queſtion, it would be indiſpenſably neceſſary that a naturaliſt ſhould thoroughly examine all Iceland. If a granite, or any other ſtone or berg-art, was found in ſolid rocks, and not ſeparate or in looſe fragments, which may have been brought thither from diſtant parts, I ſhould entirely diſſent from your opinion. But before theſe and the like diſcoveries were made, I believe no concluſions could be drawn.

I may venture to maintain with more certainty, that your collection confirms what I before concluded from other reaſons, viz. that in all volcanos pyrites are found, which on decompoſing produce heat and fire; and likewiſe ſlate that, penetrated with bitumen, ſerves to feed the fire.

12. The ſlate which you have brought from Iceland ſplits into thin plates, which diſcover many ſorts of impreſſions, particularly of leaves; the colour is black, and it is exactly of the ſame nature as the common aluminous ſlate.

13. The two pieces of ſurturbrand, or foſſil wood, which you brought with you, bear evident marks of a vegetable compoſition; and I may almoſt affirm, with perfect certainty, that the largeſt is a kind of pinus abies; on the outſide are barks and branches, and in the inſide all the rings of the ſap appear: the leſſer is a piece of rind without wood; both are black, quite ſoft, eaſily take fire, and flame in burning. After the flame is extinguiſhed, one hundred parts afford forty-two parts of coals, which after being only calcined yield two parts of yellowiſh-brown earth, that is attracted by the magnet, and partly diſſolves with acids: it makes ſome efferveſcence with borax and fuſible urinous ſalt; the ſal ſodæ alſo cauſes a little ebullition at firſt, but does not entirely diſſolve it.

Your conjecture, Sir, concerning the manner in which the ſurturbrand is produced, does not ſeem improbable. I have already obſerved a long time with ſurpriſe, that fiſhes, othoceratites, lituites, wood, &c. &c. which are to be found in ſlate, have been compreſſed or flatted, whilſt they preſerve their entire form and roundneſs in lime.

This ſame circumſtance may be obſerved in the two pieces deſcribed above, eſpecially in the larger, which is only an inch and a half in thickneſs, though it is nineteen inches

* Verlds beſkrifn, § 149.

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in length, and thirteen in breadth. The outside of it has no marks of any roundness, but is quite flat. An exceeding great weight is required to press a stick to a flat plate; and I cannot conceive how the most immense beds, which must necessarily have been soft when spread over it, could ever produce this effect. The cause of this is yet undiscovered, and will probably remain so a long time; however something may be found there which seems to shew, that the bituminous slate has been produced in the same manner, as it has not only penetrated the substance of the slate, but every thing else which has been laid upon it, for it may yet be obtained by means of distillation. But by what means has this been brought thither? How could it be imbibed by the clay, in case this was under water, which however seems to be undeniable, from the prodigious number of marine animals which are found buried? and how could the inclosed bodies have been pressed down horizontally? All these problems I cannot as yet answer satisfactorily, much less explain with any degree of certainty.

14. Very coarse, heavy, and hard lava, full of bladders, almost black, intermixed with white grains resembling quarz, which in some places have a figure not very unlike a square.

The black matter is not attracted by the magnet; but if a piece of it is held against a compass, the needle visibly moves. When tried in the crucible, it yields from ten to twelve pounds of iron in every hundred weight: it does not dissolve in the least with sal sodæ, with great difficulty with borax, and hardly visible by fusible urinous salt. It seems to contain a great deal of clay-earth in its composition, which may be extracted by all solvents of acids.

It is well known that this earth, when it is entirely free from any other mixture, may by means of heat and drying be brought to that degree of hardness, as to give fire with a steel, which proceeds from the parts being brought closer together, and contracted in a space only half as large. By being thus contracted, it obtains a solidity and hardness; and besides, the surface is so much diminished, in proportion to the whole mass, that the water cannot penetrate any farther to soften it.

We have almost daily opportunities in the study of chemistry of convincing ourselves, that a substance with a small surface cannot be changed in any manner by liquid solvents; but may however be attacked by them, in proportion to the different degrees of pulverization; nay, even a substance which cannot be reduced by the finest mechanical division, may frequently be separated, as much as is necessary, by a chemical one; that is to say, by a preceding solution in another solvent. The attraction is here in proportion to the extent of the surface; and the larger this is, the stronger will be the attack: consequently I cannot believe that any clay, petrified by heat or slow drying, can have undergone any essential change, but only that its parts have so contracted themselves as to give it the hardness of a flint to prevent it from imbibing any visible quantity of water. But as soon as it has been dissolved by any acid whatever, and its parts have by this means been brought out of its former contraction, to the requisite degree of fineness and expansion, it becomes as soft as before, without the acid contributing any more to it than has been said, as all kinds of acids succeed equally well.

I have a very good assortment of the lava of Solfatera, by which it is very evident that the sulphureous acid, which had penetrated the black lava, deprived it gradually, partly of its combustible quality, and had also whitened it (to effect which other substances, particularly silk, are likewise exposed to sulphureous exhalations), and partly had reduced it by solution, either to a perfect allum, or at least to the common nature of any loose clay. I have likewise produced all these effects with aqua-fortis, or any other acid, in a lava which had not yet suffered any change.

The white, which poſſeſſes more or leſs of thoſe tranſparent grains or rays with which the lava is chequered, do not ſeem to be of the nature of quarz, as they cannot be attacked by ſal ſodæ; they are however, with ſome difficulty, diſſolved by borax and fuſible urinous ſalt.

Theſe effects are perfectly ſimilar to thoſe produced upon the diamond, ruby, ſaphire, topaz, and hyacinth. The chryſolite, garnet, turmaline, and ſhirl, can neither be diſſolved by ſal ſodæ, though they are ſomewhat attacked by it, when reduced to a fine powder; and upon the two laſt mentioned ones it produces a ſlight effervescence. On this account it is poſſible that the precious ſtones of mount Veſuvius, which are ſold at Naples, are nearer related to the real precious ſtones than is generally imagined.

15. A finer kind of lava, quite porous within, and entirely burnt out, and conſiderably lighter on that account than the preceding ones. I have not found any ſuch grains in it reſembling quarz.

16. The ſo called Icelandic agate. This is of a black or blackiſh-brown colour, and a little tranſparent at the thin edges like glaſs, and gives fire with the ſteel.

It cannot eaſily be melted by itſelf, but becomes white, and flies in pieces. It can hardly be diſſolved in the fire by fuſible urinous ſalt; but it ſucceeds a little better with borax, though with ſome difficulty: with ſal ſodæ it diſſolves very little, though in the firſt moments ſome ebullition is perceived, and the whole maſs is afterwards reduced to powder.

From hence it may be concluded, that the Icelandic agate has been produced by an exceſſive fire out of the lava deſcribed in N° 14. I have found no cryſtals of this glaſs in the collection. If any perſon has ſuch in their poſſeſſion, they ſhould be examined to ſee if they are exactly of the ſame nature and ſubſtance with the above deſcribed agate, and if their form has not been produced accidentally by burſting aſunder.

17. More or leſs light, ſpongy, and burnt-out pumice ſtone, particularly black and reddiſh-brown. Quarz cryſtals are ſometimes found in them; but oftener the rays and grains reſembling quarz.

Stones thrown out of the volcano, grey or burnt brown, which ſeem to conſiſt of a hardened clay mixed with ſiliceous earth. They are ſprinkled with rays and grains reſembling quarz, and ſome few flakes of mica. They fuſe with great difficulty in the fire; with ſal ſodæ they ſhew ſome effervescence at firſt, but however it ſoon ceaſes: the parts reſembling quarz do not produce any motion at all. From this we may conclude, that the lava mentioned in N° 14, principally originates from this maſs.

The other looſe ſtones which I have received from you, Sir, to all appearance have no abſolute connection with the eruptions of fire, though ſome have been ſuſpected of it. I will enumerate them here ſeparately.

19. Red and green jaſper, which, in ſome places where it is broken, is quite ſmooth and ſhining; this circumſtance diſtinguiſhes it from the common jaſper, which is dull and clay-like where it is broken. It has beſides all the qualities of true jaſper; ſtrikes fire with the ſteel, does not melt in the moſt violent fire, but is diſſolved by ſal ſodæ with an effervescence, &c. &c. As to the ſmoothneſs of ſome parts, it cannot proceed from a commencing fuſion, as it becomes black and dark in a weaker fire. We here only find a new link in the connected chain of nature, by which the jaſper is united with the flint.

There is no black jaſper in your collection; but the pieces, which to appearance comes neareſt to it, belong to the claſs of the trapp, and ſhall be deſcribed hereafter.

20. Grey, greeniſh ſlate, reſembling jaſper, that gives ſparks with the ſteel, is attacked with a quick effervescence by ſal ſodæ, but not farther diſſolved by it. In ſome places

places are grains reſembling quarz, which are eaſily diſſolved in fuſible urinous ſalt, but do not ſhew the leaſt efferveſcence in ſal ſodæ.

21. The ſmall cryſtals, ſaid to reſemble cocks-combs; they are nothing but a different appearance or change of the heavy ſpar.

22. A chalcedon cruſt with ſmooth prominencies, like what they call hæmatites: this is diſſolved with the utmoſt difficulty by fuſible urinous ſalt, with more eaſe by borax, and with a violent efferveſcence by ſal ſodæ, exactly as the flint.

23. Zeolite; two kinds: the one is ſolid, white, and internally, as it were, compoſed of globoſe parts, in which rays proceeding from the center appear that reſemble fine threads.

This ſort ſwells a little by the blow-pipe, diſſolves perfectly with borax, ſeparates in ſal ſodæ with ſome efferveſcence, but ſoon ceaſes, and leaves ſome part undiſſolved.

The other ſort conſiſts of a plate, which in colour and break reſembles a carnelian: it has a quantity of ſmall prominencies in it, filled with irregular white cryſtals, and ſome of the cavities are filled with a looſe-grained and browniſh-red ſubſtance.

The ſubſtance reſembling a carnelian becomes white in the fire, bubbles up, and becomes fuſible.

The cryſtalline ſubſtance becomes more frothy in the fire than the carnelian, and has all the qualities of the zeolite.

The ſandy ſubſtance hardly ſwells; is diſſolved with difficulty by borax, and is attacked at firſt with a ſudden efferveſcence by ſal ſodæ.

As it is not uncommon even in the profeſſors of morality to paſs from one wrong ſtep to another, ſo are we not without examples of this kind in thoſe who make nature their ſtudy. Ten years ago it was a general opinion that the ſurface of the earth, together with the mountains upon it, had been produced by moiſture. It is true, ſome declared the fire to be the firſt original cauſe, but the greater number paid little attention to this opinion. Now, on the contrary, that a ſubterraneous fire had been the principal agent gains ground daily: every thing is ſuppoſed to have been melted even to the granite. My own ſentiments with regard to it is this, that both the fire and water have contributed their ſhare in this operation, though in ſuch a proportion, that the force of the former extends much further than the latter; and, on the contrary, that the fire has only worked in ſome parts of the ſurface of the earth.

It is not an eaſy matter to explain how the granite, which conſiſts of clear quarz-cryſtals, ſolid field-ſpar, and glimmer (*mica*) with flat ſcales, has been able to ſupport a fuſion, without the quarz burſting, or becoming opaque.

This is yet leſs to be conceived of the field-ſpar, that becomes ſoft and liquid in a weak fire, and has a dull appearance. The glimmer ſplits its ſcales aſunder in the fire, and frequently twiſts them together again in a very different manner from that in which they appear in the granite. Notwithſtanding all this, if the granite is conſidered as a production of the fire, it need not be wondered at that the zeolite has likewiſe been comprehended in this ſuppoſition.

I will allow that cryſtals may be produced by the dry method, and I know ſeveral ways of obtaining them, both by fuſion and ſublimation; but I can never be perſuaded that the zeolite has been produced by the aſſiſtance of fire. It is true, that ſometimes they are found in looſe ſtones, and in ſuch places where volcanos had formerly raged: it is likewiſe found in ſolid rocks that have never been expoſed to theſe fires, as at Guſtavenberg in Jemtland.

If more ſorts than one are alſo certainly free from all ſuſpicion of having been ſubject to fuſion, how is it poſſible, without the cleareſt proofs, to ſuppoſe that the whole genus has

has been ſubject to it? If the Icelandic zeolite has been prepared by fire, we may juſtly queſtion how it can produce above five quarts in twenty-five of water in diſtilling. This may likewiſe be applied to all the other ſorts, though they generally contain leſs water, and the red ſort from Adelfors only one quart in twenty-five. This is evidently the water of cryſtallization, in proportion to which each kind ſwells more or leſs by the blow-pipe. The Icelandic and Feroe zeolites are moſt ſubject to this, almoſt like borax; the Adelfors zeolite ſwells much leſs, and that from Upland, and ſeveral other ſorts, ſo little, that it ceaſes in a moment; and even then produces ſo ſmall an expanſion of ſpace, that it is ſcarcely perceivable to the eye.

Since therefore all zeolites contain this water of cryſtallization, which is neither found nor expected in the productions of fire, it ſeems to me to be undeniable, that they have been produced in the way of moiſture; beſides the zeolites do not conſiſt of a ſimple particular kind of earth, but of three different ſorts which are mixed together, and in a manner the one diſſolved by the other, in conſequence of which their connection cannot be conſidered as an original earth. In all, the greateſt part conſiſts of ſiliceous earth, the next is argillaceous earth, and the leaſt part is calcareous earth. The two laſt ſorts may be diſſolved by acids, and then precipitated by alkali volatile cauſticum, by which the argillaceous earth, but not the calcareous earth, after being ſeparated from the firſt by filtrating, may be precipitated by ſal ſodæ.

In this manner I have found that the zeolites deſcribed above, contain 48 in 100 of ſiliceous earth, 22 of pure argillaceous earth, and from 12 to 14 of calcareous earth. If theſe numbers were added together, and reckoned with what it contains of water, the produce is ſomething more than 100. This ſurplus proceeds from the calcareous earth, that enters into the zeolite without fixed air, with which it is afterwards impregnated during the precipitation. Other zeolites contain exactly the ſame ſubſtances, only in different proportions.

Of thoſe which I have hitherto examined, the Jemtland zeolite contains the greateſt quantity of calcareous earth, that is to ſay, 16 parts in 100, and that from Feroe the leaſt, namely, 8 in 100. The red zeolite from Adelfors contains the greateſt quantity of ſiliceous earth to wit 80 in 100, and the Icelandic the leaſt, to wit 48 in 100. The zeolite from Feroe contains moſt argillaceous earth, namely, about 25 in 100, and that from Adelfors the leaſt, or about 9 in 100. When the original compoſition of any kind of ſtone is thus known, it is not difficult to determine its qualities.

The zeolites at firſt froth and ſwell in the fire, the cauſe of which has been already explained.

They afterward fuſe more or leſs perfectly. The ſwapparara may be reduced to a clear glaſs, and the Upland red zeolite can hardly be brought to give any ſigns of vitrification on the ſurface.

It is well known that quarz, pure argillaceous earth and lime, cannot ſeparately be made to fuſe, nor two and two mixed together in many caſes; but when all three are compounded, they are more or leſs inclined to fuſion. One part of pure argillaceous earth, with one part of lime, and two and a half to three parts of quarz, afford a mixture, which is eaſieſt brought to fuſe. If the compoſition of the zeolites is compared with this mixture, they are found to be fuſible in the ſame meaſure as the proportion of their conſtituent parts approaches more or leſs to the above-mentioned compoſition.

They are more ſtrongly attacked by ſal ſodæ than by borax, or fuſible urinous ſalt, becauſe there is in all moſt ſiliceous earth, which is beſt diſſolved by the ſolid alkaline ſalt in the dry way.

Laſtly,

Laſtly, ſeveral ſorts have the quality of yielding jellies, that is to ſay, they change a proportionable quantity of acid to a ſemi-tranſparent congealed maſs, which reſembles a jelly.

Theſe congelations may in general be produced in different ways; ſometime the menſtruum by length of time loſes its power, when the diſſolved part is attacked gradually, though imperfectly diſſolved, ſo that in a manner it remains ſuſpended half diſſolved, and after ſome evaporation at laſt congeals to a tough coherent ſubſtance. This frequently happened in diſſolving tin in marine acid, or aqua regia, when the inflammable ſubſtance decreaſes too much, and by that means weakens the connection between the metal and the ſolvent.

Sometimes a kind of gelatinous congelation is produced by an imperfect precipitation. For inſtance, when the liquor ſilicum is united with a certain quantity of acid, ſo that the ſiliceous earth is not entirely ſeparated, but remains ſuſpended in the liquor. This much reſembles a circumſtance exhibited by ſome zeolites, which I will now more fully explain.

As the red zeolite of Adelfors produces this effect more clearly than any other, it ſhall ſerve as an inſtance of it. After this is ſeparated and freed as much as poſſible from calcareous ſpar, three or four tea-ſpoons full of it muſt be thrown into a wine glaſs half filled with common aqua-fortis; when after a ſhort time the whole ſolution will be found in the form of a reddiſh gelatinous ſubſtance, that nothing of it runs out if even the glaſs is turned. To diſcover the cauſe of this, I have taken ſome of the cleareſt jelly, and diſſolved it with boiling water in a glaſs mortar, and left it to dry on a filtering paper after a perfect filtration, by which means the place which it occupied was incredibly diminiſhed. I then tried this ſubſtance with acids, but it was not at all attacked, and did not melt in the ſtrongeſt fire alone. The fuſible urinous ſalt hardly attacked it; borax diſſolved it, though with difficulty; but ſal ſodæ diſſolved it perfectly with a ſtrong efferveſcence. In conſequence of this the gelatinous ſubſtance chiefly conſiſts of ſiliceous earth expanded in the higheſt degree. But by what means has this indiſſoluble ſubſtance been introduced into a ſolvent?

We have before obſerved, that the Adelfors zeolite contains eighty parts in a hundred of ſiliceous earth, nine and a half of argillaceous earth, and ſix and a half of calcareous earth free from fixed air; all which ſubſtances are united as cloſe as poſſible. If therefore the powder is thrown into an acid, and remains there during ſome time, the argillaceous and calcareous earths are immediately attacked by it; but theſe are internally connected with the ſiliceous earth, and conſequently take a conſiderable part of it half diſſolved into the ſpungy and ſwollen ſtate, which all ſubſtances generally exhibit in the moment of precipitation. The ſame thing happens when a reſinous gum is laid into ſpirits of wine; part of the gum, together with the reſin, is then immediately diſſolved by the ſpirits of wine on account of its connection, though the firſt alone cannot be diſſolved by it at all. If a ſufficient quantity of water or acid is added before the liquor begins to congeal, no congelation enſues, but the ſiliceous earth falls in looſe flakes to the bottom, which evidently proves that the ſolvent, in regard to its quantity and ſtrength, muſt be confined within certain limits. An addition of ſome chalk increaſes its tendency to gelatinous congelations, partly becauſe the ſolution becomes more broken and ſolid, and partly by means of bubbles of fixed air, which attach themſelves to the ſpungy ſiliceous powder, and make it lighter; whence the zeolite of Adelfors in this caſe ſeems to have an advantage over every other ſort, on account of the lime-ſpar naturally mixed with it; the principal part however no doubt depends on the ſeveral parts which compoſe it. Some ſorts afford only a gelatinous ſubſtance after a preparatory calcination; the cauſe of which moſt probably is this, that the calcareous

earth has not before been enough united with the ſiliceous earth, at leaſt not with the whole of it. It is well known that lime and quarz, when expoſed to the operation of a fire, that has only cauſed them to bake together, nevertheleſs afterwards yield a gelatinous ſubſtance. Alcaline ſalt mixed with ſand affords a ſimilar demi-concretion, as when we calcine pot-aſhes; on which account the cleareſt ſolution a long while after precipitates ſiliceous powder, in the ſame proportion that the alcaline ſalt attracts fixed air, with which it preferably unites itſelf. This generally produces a gelatinous congelation, when the water is ſaturated with alcaline ſalt, and alſo is well charged with ſiliceous earth.

For the ſame cauſe, clay, ſpathoſe fluor, and other ſubſtances, hard to be diſſolved in acids, may be brought to a gelatinous congelation, when they have before by fuſion been united with alcaline ſalt, borax, or calcareous earth: calcareous earth by itſelf never gives a gelatinous ſubſtance in acids, conſequently it can ſo much the leſs become a ſiliceous earth by this method, as has however been thought by ſome, who would ſoon relinquiſh their opinion if they would only make experiments themſelves; where there is no flint before, it cannot poſſibly be propoſed by any other acid, but that which is obtained from ſpathoſe flour.

But at preſent this is enough of the zeolite, of which I have treated more extenſively, as it is found in great abundance in Iceland, and is ſuppoſed by ſome to be produced in the dry way; but I hope that this matter is at preſent entirely determined, not only by its ſeparation, but alſo by its production, which happens daily in the water. See N° II.

I have for ſeveral years paſt endeavoured to diſcover the number as well as the nature of the original kinds of earth. In the year 1758 Mr. Cronſtedt counted nine; if he had lived longer for the benefit of the ſciences, he would no doubt have rectified this account. In conſequence of my experiments I have diſcovered the following ſix ſorts:

1. Calcareous earth, which after being ſaturated by acid of vitriol affords a kind of gypſum.

2. Terra ponderoſa, which with acid of vitriol gives a ponderous ſpar, and in ſeveral reſpects is very different from the calcareous earth.

3. Magneſia, which, together with acid of vitriol, produces the Engliſh or Epſom ſalt.

Theſe three kinds are generally found ſaturated with fixed air, and they are on that account ſubject to an effervescence with ſtronger acids.

4. Argillaceous earth, which, together with the vitriolic acid, produces allum.

The common argillaceous earth is always mixed with ſiliceous earth, but the ſort here meant muſt be entirely pure.

5. Siliceous earth, which is not attacked by any acid yet known, the flour acid excepted. In the dry way it can be diſſolved with a third part of its weight of fixed alkali to a tranſparent laſting glaſs, which at firſt is affected with a ſtrong effervescence.

6. Gemmeous earth, that is not attacked by any known acid, and clearly diſtinguiſhes itſelf from the preceding ſorts, by its being entirely indiſſoluble, and being ſubject to a weaker effervescence in the fire with fixed alcali. It is found in all the gems or precious ſtones.

I have in vain made uſe of various methods to ſeparate theſe earths into more ſimple principles, and to all appearance others would have no better ſucceſs than I have had: if they are really compounds, they are at leaſt ſimple in regard to the method known among us of ſeparating ſubſtances, and do not ariſe from one another. Whatever has therefore been objected to this opinion from prejudice, cannot ſubſiſt after experiments

have been made upon that ſubject. We muſt not pretend to improve nature according to our notions, but endeavour to diſtinguiſh all kinds of ſubſtances which have ſufficient and laſting marks of diſtinctions. No certain origin can be made unleſs the ſeparation and compoſition of them, which may be relied on, has been made before. All the different ſorts of ſtone and earth, hitherto known, are compoſed of one or more of the ſix principal ſorts before-mentioned, which ſhall be proved more at large in another place, as ſoon as I am able to make ſome experiments that require repetition.

Of the Baſalts.

OF all the mountains hitherto known, there are without doubt not any more remarkable than thoſe that are compoſed of angular pillars. A few years ago only one or two of this kind were known; but new ones are daily diſcovered, which is a plain proof how much our attention requires being rouzed to prevent it from ſlumbering, even on the moſt important occaſions.

It cannot much be doubted that there has been ſome connections between theſe pillars, and the effects of a ſubterraneous fire, as they are found in places where the ſigns of fire are yet viſible; and as they are even found mixed with lava, tophus, and other ſubſtances produced by fire.

The cauſe of the regular form of theſe pillars is a problem which we have hitherto been unable to ſolve ſatisfactorily. This difficulty has appeared ſo inſurmountable to ſome, that they have thought it impoſſible to be the effects of Nature, and have conſidered them as works made by human hands: this idea betrays the utmoſt ignorance in regard to the true nature of theſe mountains of pillars, and does not even deſerve a refutation.

As far as we know, Nature makes uſe of three methods to produce regular forms in the mineral kingdom, namely, that of cryſtallization or precipitation: ſecondly, the cruſting or ſettling of the external ſurface of a liquid maſs whilſt it is cooling: and, thirdly the burſting of a moiſt ſubſtance whilſt it is drying.

The firſt method is the moſt common, but to all appearance nature has not made uſe of this in the preſent caſe. Cryſtals are ſeldom or never found in any conſiderable quantity running in the ſame direction, but either inclining from one another, or, what is ſtill more common, placed towards one another in ſeveral ſloping directions. They are alſo generally ſeparated a little from one another, when they are regular; the nature of the thing likewiſe requires this, becauſe the ſeveral particles, of which the cryſtals are compoſed, muſt have the liberty of following that power which affects their regular diſpoſition.

The baſalt columns, on the contrary, whoſe height are frequently from thirty to forty feet, are placed parallel to one another in conſiderable numbers, and ſo cloſe together that the point of a knife can hardly be introduced between them. Beſides, in moſt places, each pillar is divided into ſeveral parts or joints, which ſeem to be placed upon one another; and indeed it is not uncommon for cryſtals to be formed above one another in different layers, when the ſolvent has been viſibly diminiſhed at different times; but then the upper cryſtals never fit ſo exactly upon the lower ones as to produce connected priſms of the ſame length and depth as all the ſtrata taken together, but each ſtratum ſeparately forms its own cryſtals.

How then can the Giant's Cauſeway in the county of Antrim, Fingal's Cave at Staffa, and all other aſſemblages of pillars of the ſame kind, be conſidered as cryſtallizations? Precipitation, both in the wet and dry manner, requires that the particles

ſhould be free enough to fix themſelves in a certain order; and as this is not practicable in a large melted maſs, no cryſtallizations appear in it, except on its ſurface, or in its cavities.

Add to this, that the baſalts in a freſh fracture, do not ſhew a plain ſmooth ſurface under the microſcope, but appear ſometimes like grains of a different magnitude, and at other times reſemble fine rays running in different directions, which does not correſpond with the internal ſtructure of the cryſtals, which I have endeavoured to examine in another place.

From what I have hitherto mentioned, the opinion that the baſalts have been produced by cryſtallization, becomes at leaſt leſs probable, whether we admit the wet or dry method. But I muſt not omit that the ſpars exhibit a kind of cryſtallization, which, at firſt ſight, reſembles a heap of baſalts, but, upon a cloſe examination, a very great difference is obſerved. The form of the ſpar is every where alike, but the baſalts differ from one another in point of ſize and number of ſides; the former, when broken, conſiſts of many ſmall unequal cubes, but the baſalt does not ſeparate in regular parts, &c. &c.

Nature's ſecond method to produce regular forms is that of cruſting the outer ſurface of a melted maſs. By a ſudden refrigeration Nature, to effect this purpoſe, makes uſe of polyedrous and irregular forms. If we ſuppoſe a conſiderable bed, which is become fluid by fire, and ſpread over a plain, it evidently appears that the ſurface muſt firſt of all loſe the degree of heat requiſite for melting, and begin to congeal; but the cold requiſite for this purpoſe likewiſe contracts the uppermoſt congealed ſtratum into a narrower ſpace, and conſequently cauſes it to ſeparate from the remaining liquid maſs, as the ſide expoſed to the air is already too ſtiff to give way. In this manner a ſtratum is produced running in a parallel direction with the whole maſs, others ſtill are produced by the ſame cauſe, in proportion as the refrigeration penetrates deeper.

Hence we may, in my opinion, very plainly ſee how a bed may be divided into ſtrata. In the ſame manner the refrigeration advances on the ſides, which conſequently divides the ſtrata into polyedrous pieces of pillars, which can hardly ever be exactly ſquare, as the ſtrongeſt refrigeration into the inner parts of the maſs advances almoſt in a diagonal line from the corners. If we add to this, that a large maſs cannot be equal throughout its compoſition, nor every where liquid in the ſame degree, it will be eaſy to diſcover the cauſe of ſeveral irregularities. If the depth of the bed is very conſiderable, in proportion to its breadth, priſmatic pillars, without croſs diviſions, are produced, at leaſt lengthways, from the uppermoſt ſurface downwards.

The third way is perfectly ſimilar to the preceding in reſpect to the effect, but is different from it by the maſs being ſoaked with water, and by the burſting of it aſunder, being the effect of the contraction whilſt it is drying. If we ſuppoſe ſuch a bed to be ſpread over a level ſpace, the drying advances in the ſame manner as the refrigeration in the former caſe.

This ſeparation into ſtrata properly happens when a conſiderable quantity of clay enters into the whole compoſition, becauſe the clay decreaſes more than any other kind of earth in drying.

We muſt now examine which of theſe two ways may beſt ſerve to explain the manner in which the baſalts are produced, for it is hardly poſſible that they ſhould have been formed by cryſtallization.

However well founded the opinion may appear of deducing them from a melted ſubſtance, ſeveral very conſiderable objections however may be raiſed againſt it, which I ſhall not forget to mention. It ſeems therefore more credible to me, that they have been

produced out of their ſubſtance whilſt it was yet ſoft, or at leaſt not too hard to be ſoftened by exhalations. If we therefore ſuppoſe that a bed is ſpread over a place where a volcano begins to work, it is evident that a great quantity of the water always preſent on theſe occaſions, is driven upwards in exhalations or vapours; theſe, it is well known, poſſeſs a penetrating ſoftening power, by means of which they alſo produce their firſt effect; but when they are increaſed to a ſufficient quantity, they force this tough moiſt ſubſtance upwards, which then gradually falls, and during this time burſts in the manner deſcribed above.

My reaſons for this opinion are theſe; firſt, we do not find the internal grain of the baſalts melted or vitrified, which however ſoon happens by fuſion, and for which purpoſe only a very ſmall degree of fire is requiſite. It conſequently is very hard to explain how this ſubſtance could have been ſo fluid, that no traces of bubbles appear in it (at leaſt I have not been able to diſcover any, after the niceſt examination into the Scotch and Icelandic baſalts) and yet when broken appear dull and uneven. I know very well that lava is ſeldom vitrified within; but the great number of bubbles and pores which are found in the whole maſs, are more than ſufficient proofs that it has not been perfectly melted to its ſmalleſt parts, but has only been brought to be near fluid.

Secondly, the baſalts ſo much reſemble the finer trapp, both in reſpect to their grain and original compoſition, that they can hardly be diſtinguiſhed in ſmall fragments, as will be more plainly proved in the compariſon which I will make hereafter. See N° 24.

But the trapp in all probability has never been melted, at leaſt not in thoſe parts where I have had opportunities of examining it.

Almoſt in all the weſt Gothic ſtratified mountains, the uppermoſt ſtratum is trapp; and it muſt be well obſerved, that it always lies upon black allum ſlate. Is it therefore credible that this ſubſtance, which in many places extend above a hundred yards, can have been perfectly melted, without cauſing the ſlate lying beneath it to loſe ſome part of its blackneſs, even in thoſe places where they touch one another, as this effect may be produced in a ſmall culinary fire?

There is beſides a finer kind of trapp, which is generally found in veins or loads, and frequently in very ancient mountains, where not the leaſt traces of ſubterraneous fire are to be ſeen.

The baſalt mountains ſeem to be very ancient, at leaſt I do not know that the age of any one is aſcertained. Should they then be ſo old, that the ſubſtance of the trapp was not yet perfectly hardened, when were they produced? Beſides, we frequently find to this day clayey ſubſtances at a great depth, which are ſo ſoft that they may be ſcraped by the nail, but afterwards become very hard when expoſed to the air.

There have without doubt been many eruptions of fire on the iſle of Staffa, as the ſituation of the pillars and their being removed out of their places evidently prove.

You, Sir, have likewiſe brought a very clear proof of this from thence, which is a piece of baſalt, that on the exteriorly is full of hollows, and in a manner burnt.

A hard ſubſtance, when expoſed to a degree of heat inſufficient to melt the whole piece, may, however, be attacked by it in ſome parts of the ſurface moſt liable to become fluid. The mixture of a large maſs is ſeldom every where ſo uniform, that ſome parts ſhould not be more liable to melt than others.

Crooked pillars may be produced as well by the drying as the refrigeration of a liquid maſs; for this purpoſe it is only neceſſary that the ſurface ſhould be bent, as the ſtratum always runs in a parallel direction with it.

From what I have hitherto ſaid, you will perceive it is my opinion, that the baſalts have been produced by the aſſiſtance of a ſubterraneous fire, but that it is not yet determined whether they have been rent aſunder after the fuſion, or by drying: this laſt however appears more credible to me on account of the reaſons I have mentioned. For to ſpeak ſtrictly, the ſubſtances incloſed in the baſalts, though they ſhould even be volcanic, do not yet with certainty prove a preceding fuſion, as a ſubſtance ſoftened by water may be as proper for it as one fuſed by fire. I am however very far from being inclined to maintain my opinion any farther than it agrees with certain experiments and experience.

Truth will ſooner or later be diſcovered; and I know nothing more derogatory to the honour of a natural hiſtorian, than having wilfully obſtructed its paſſage.

I will now give a more full deſcription of the baſalts and different kinds of trapp which you have brought from Staffa and Iceland.

24. Baſalt from Staffa.—The piece preſented to me is a priſmatic hexagonal fragment, three ſides of which are almoſt of equal dimenſions, and are connected with one another; two others are larger, and are ſeparated from one another by the ſixth and ſmalleſt; it is a little concave at the top, and convex at the bottom.

Trapp is generally found in ſquare irregular cubes, whence it has moſt probably obtained its denomination, on account of ſome ſimilarity with ſtones made uſe of for ſtair-caſes.

It is alſo found in priſmatic triangular forms, though rarely, as alſo in the form of immenſe pillars. Of this kind are thoſe called Traeleſtenar, oppoſite Bragnum, at the foot of the Hanneberg, which have ſeparated themſelves from the remaining part of the bed; and in 1759, when I firſt ſaw them, formed an angle of about eight degrees with the plumb-line.

The baſalt from Staffa, when newly broken, is of a blackiſh grey, ſhining, and ſmall ſcaled; and I have diſcovered with the microſcope ſome ſmall white particles ſprinkled up and down.

The fineſt trapp is perfectly ſimilar when broken, only of a lighter colour, which proceeds from the greater quantity of white particles.

The ſurface decays to a grey yellow looſe cruſt, which loſes itſelf in the more ſolid maſs.

The fine trapp decays in the ſame manner.

The baſalt when ſtruck with the ſteel hardly gives fire, though a ſpark may now and then be obtained with difficulty.

This ſame circumſtance may be obſerved of the trapp.

Its ſpecific weight is about 3000, and that of the trapp about 2990.

It becomes very beautiful by cutting, poliſhing, and grinding.

Likewiſe the more fine kind of trapp.

It yields an aſh-coloured powder.

The trapp yields rather a powder of a more light colour.

It ſoon melts to black glaſſy flags.

The trapp likewiſe.

The baſalt is attacked by ſodæ with an effervescence which ſoon ceaſes, and, though ſome ſeparation enſues, the greater part however remains undiſſolved. Borax perfectly ſolves it without effervescence, and gives a clear iron-coloured glaſs. It is ſolved with great difficulty by fuſible urinous ſalt, and whilſt cooling becomes of a whitiſh grey, and not tranſparent.

The ſame effects are produced by theſe acids upon the trapp.

One hundred parts of baſalt very finely powdered, and ſeveral times digeſted with freſh aqua regia, and then well waſhed and dried, leave ſixty-eight parts undiſſolved.

The remainder of this ſhews a little efferveſcence before it unites with the ſal ſodæ, and diſſolves very little. It is diſſolved with eaſe by borax, and with difficulty by fuſible urinous ſalt. It ſeems therefore to be a mixture of ſiliceous and gemmeous earth.

The ſolution gives by precipitation with lixivium ſanguinis as much Pruſſian blue as is equal to twenty-ſix parts in one hundred of iron; though the baſalt, by being tried in the uſual manner in the crucible, does not yield above ten in one hundred. This proves that lixivium ſanguinis affords the moſt exact method of aſſaying iron ore.

When at laſt the ſolution is precipitated with cauſtic volatile alkali, after the iron has been ſeparated by lixivium ſanguinis, ſaturated with acid, pure argillaceous earth is obtained.

Sometimes a little calcareous earth appears after a preceding precipitation; when diſſolved ſal ſodæ is added; but ſometimes not the ſmalleſt traces of it can be diſcovered, even with the acid of ſugar, which is however the ſafeſt method hitherto known of diſcovering it. The calcareous earth ſeems therefore to be accidental. This is however very certain, that the interſtices between the pillars are ſometimes found filled up with calcareous ſpar.

The trapp is exactly of the ſame nature, and contains nearly the ſame alloy, ſo that the experiments differ only one or a half part in one hundred. The moſt conſiderable difference conſiſts in the calcareous earth appearing here more viſibly, ſo that generally a ſlight efferveſcence is obſerved when an acid is poured on the powder.

25. Baſalt from Hvitara, near Skalholt, in Iceland.—The piece in my poſſeſſion is too ſmall to diſcover its form; only a part of the outſide can be diſtinguiſhed. When freſh broken it reſembles the baſalt from Staffa, though ſomething may be obſerved in it which is very ſeldom diſcovered in the laſt. Theſe are ſmall round cavities, not larger than pins heads, thinly ſcattered in ſome places, as likewiſe on the outſide. All theſe cavities are filled up with a white, green, or brown powder.

May not theſe perhaps have been ſome particles of a ſubſtance, which eaſily diſſolving was become liquid, though the whole maſs had not a ſufficient degree of heat to melt it?

But whence can theſe cavities be filled with this powder? In the midſt of ſo ſolid a maſs, no decay ſeems to be poſſible.

The ſubſtance of the baſalt itſelf produces a little efferveſcence with ſal ſodæ, and ſeparates without being viſibly diſſolved. It diſſolves in borax, as likewiſe in fuſible urinous ſalt, although with more difficulty. By the common method of proving it in the crucible it yields ten parts in one hundred of iron. The ſame circumſtances may be obſerved in trying the powder that fills up the cavities; it only ſeems to melt a little eaſier than the ſolid ſubſtance ſurrounding it.

26. The baſalt from Langarnas perfectly reſembles coarſe trapp, though it has more white particles, and ſometimes cryſtallizations as large as a cherry-ſtone; the dark grey and white parts prove to be entirely of the ſame nature. by the blow-pipe, becomes fluid by itſelf, and produces a ſudden efferveſcence with ſal ſodæ, but without being quite diſſolved by it: it is exactly as the preceding ſort.

27. Black, ſolid, gloſſy trapp, knotty within, and reſembling wood in its internal ſtructure, being full of filaments. Many pieces are grown to a cruſt of pumice on one ſide or another, though their edges are quite freſh and ſmooth; whence we may conclude, that they themſelves have not been melted, but have either been thrown into the lava,

lava, which was already burnt out, or that the lava has flowed over them: ſome part of it however ſeems to have been more attacked by the fire.

The manner in which the fire and acids operate upon this trapp, is exactly the ſame as with the preceding baſalt. There are likewiſe ſome grains ſcattered in it reſembling quarz, which are not ſolved by ſol ſodæ, nor does it cauſe any efferveſcence; borax and fuſible urinous ſalt entirely diſſolves them, though ſlowly.

28. A compact dark brown trapp from Vido, the ſurface of which is glaſſy and uneven, as if it had been made fluid by fire. It muſt alſo be obſerved, that cryſtallizations of freſh pyrites are frequently found in theſe glaſſy rough pieces. The glaſſy ſubſtance eaſily becomes fluid with ſome ebullition, almoſt like ſhirl; beſides, it exhibits the ſame circumſtances with acids as the preceding.

You will ſee, Sir, by this long letter, that in the eruptions in Iceland argillaceous and ſiliceous ſubſtances have been principally concerned, as has been the caſe in other parts. I know very well that Mr. Beaumè maintains, that ſilex might be made to afford allum with acid of vitriol after it has been diſſolved in liquor ſilicum with ſal ſodæ. But when the fuſions are made in veſſels which contain no argillaceous earth, no allum can be obtained with acid of vitriol, which, however, may be obtained when the vegetable alkali is kept fluid during a conſiderable time in a common crucible, becauſe the alkali diſſolves ſome part of the veſſel itſelf. Pure ſiliceous earth is entirely indiſſoluble by itſelf in acid of vitriol, let it be treated in any manner whatſoever.

Let this account of theſe dreadful devaſtations be ſufficient.

Homo naturæ miniſter et interpres, tantum facit et intelligit, quantum de naturæ ordine, re vel mente obſervaverit, nec amplius ſcit aut poteſt. *Baco.*

RELATION

RELATION OF A VOYAGE IN THE NORTH SEA, ALONG THE COASTS OF ICELAND, GREENLAND, FERRO, SHETLAND, THE ORCADES, AND NORWAY, MADE IN THE YEARS 1767 AND 1768, BY M. DE KERGUELEN TREMAREC, OF THE ROYAL MARINE ACADEMY IN FRANCE, LIEUTENANT, COMMANDER OF THE FRIGATES LA FOLLE AND L'HIRONDELLE.

PREFACE.

HIS Majeſty being deſirous that encouragement and protection ſhould be given to the cod fiſhery on the coaſt of Iceland, carried on between the months of April and September, the Duc de Praſlin, miniſter and ſecretary of ſtate for naval affairs, diſpatched the frigate La Folle to a ſtation off Iceland, to preſerve good order among the French fiſhermen, to protect them, and to furniſh them with any ſuccours they might require. Towards the end of January 1767 I received an order at Breſt from the Duc de Praſlin, to repair to court upon his majeſty's ſervice. I ſet off immediately, arrived at Verſailles, and preſented myſelf to the miniſter, who informed me that he had appointed me to the command of the frigate La Folle, of twenty-ſix guns, and two hundred men, for the object I have before deſcribed. Although I muſt neceſſarily on this cruize be ſubject to much fatigue and inconvenience, the novelty of it, and the inclination which from my moſt tender infancy I had always felt for cruizing, occaſioned me an indeſcribable ſatisfaction. M. Rodier, firſt clerk in the navy-office, communicated to me ſundry documents and regulations relative to the fiſhery in queſtion. On the ſame ſubject I had the honour of ſeeing the preſident Ogier, who during his embaſſy to Denmark obtained conſiderable information on this branch of commerce, and had amicably ſettled ſome diſputes which had aroſe upon the occaſion of it. He had the kindneſs to impart to me all the elucidation I could require: he informed me that the King of Denmark had granted to a company eſtabliſhed at Copenhagen the excluſive privilege of trading with Iceland; that every foreign veſſel, or even Daniſh, not belonging to the company, was liable to confiſcation if found upon the coaſts of Iceland; that the company kept cruizers to maintain its rights, and to capture any veſſel infringing them; that theſe cruizers three years before, had made themſelves maſters of two ſhips from Dunkirk, which were ſold at Copenhagen; that theſe two ſhips had been fiſhing for cod upon the coaſt of Iceland, and were ſurpriſed in a harbour by the cruizers, with wool and other contraband articles on board, but being ambaſſador at the time he had reclaimed them, and had them reſtored with all coſts and intereſt. The Duc de Praſlin ordered me to Dunkirk, to confer with the gentlemen of the chamber of commerce on the means of encouraging the fiſhery, and ſecuring ſucceſs, by eſtabliſhing regulations and a diſcipline by which the men were to abide. After taking the meaſures neceſſary at Dunkirk, and chooſing two ſailors well acquainted with the coaſts of Iceland, I returned to Verſailles for my laſt orders from the Duc de Praſlin, and proceeded afterwards to Breſt to equip my frigate: on the firſt of April ſhe was taken into dock to be careened; ſhe came out again on the third, and the fourth her equipment began; in order to haſten which, I divided the operation among my officers. M. Duchaſtel, who was my ſecond lieutenant, had the care of the ſtowage, and general inſpection with M. de la Martilliere, midſhipman; lieutenant Le Chevalier Ferron, had the inſpection of proviſions, with Meſſrs. Pehan and Le Rouge, midſhipmen; M. Lerondel and Le Chevalier Menyeau, midſhipmen, looked to the guns and ammunition; and Meſſrs. Dorvault and Menyeau, ſenior, to the

ſails and rigging. By the exertions of theſe officers, whoſe talents cannot be too highly praiſed, my frigate was entirely equipped in four days, with ſix months proviſion on board. She fell down to the road-ſtead on the eleventh of April, where I anchored in ten fathoms water, with bottom of mud and ſand, mooring her E. S. E. and W. N. W. with a heavy anchor. Being moored, I ſet Point Porzic at W. quarter S. W. five degrees S., and Round Iſland at S. quarter S. E. four degrees E. This is the beſt anchorage in the road; it is called La Foſſe, on account of the bottom riſing from the middle; but as it is at ſome little diſtance from the port, it is moſtly frequented by large veſſels.

Nothing intereſting occurred to me in the road till the twenty-firſt, when I experienced a heavy gale of wind from the S. S. W. During my ſtay there I exerciſed the ſhip's company in the rigging, and at the great guns. M. Duchaſtel made out the roll for the watch, and engaging; that for engaging was made after a manner which ought to be generally adopted: it diſtributed, for example, to the ſtarboard watch the uneven guns, one, three, five, ſeven, and to the larboard watch the even ones, two, four, ſix, eight.

By this means a veſſel can never be taken by ſurpriſe; for the watch on duty on the deck may by night and day ſerve half the guns: ſhe may prepare on a ſudden as well to fire from both ſides, on giving the word ſtarboard to the ſtarboard, and larboard to the larboard ſide. To conclude, the watch may exerciſe at the guns, without waking thoſe who have turned in.

FIRST PART.

Containing the Courſe from Breſt to Iceland.

I RECEIVED my inſtructions from court the twenty-ſixth of April 1767, and the next day, the twenty-ſeventh, I left Breſt roads at nine in the morning, at the beginning of flood tide, and with a very weak N. E. wind; as I got off the land it became ſtronger: at five in the evening we made Uſhant, bearing E. N. E. five leagues and a half diſtant. I ſteered all night W. N. W. to make an offing, and ſeeing by the weather that the eaſterly winds were likely to continue, I kept the point ahead at N. N. W., in order to reach Cape Clear. The twenty-eighth, at noon, I was by obſervation in lat. 48° 46′, and long. 10° 3′ W. from Paris. At ſun-ſet I noticed the variation of the compaſs to be 20° towards the W. The twenty-ninth, at half paſt eight in the morning, after having run forty-five leagues by the log in the preceding day, I diſcovered Cape Clear. At ten o'clock, Miſſin-head bearing N. N. E. five leagues diſtant, I ſounded and found ſixty-five fathoms water, the bottom a muddy ſand mixed with pebbles. Afterwards I ſteered N. W. quarter W. On the twenty-ninth, at noon, I found the lat. 51° 5′, and long. 12° 24′ W. M. Boutanguoy, my firſt pilot, obſerved 21° of variation in the morning. I remarked that Miſſen-head was a better land to make for than Cape Clear, on account of its being higher, and more eaſy to perceive. I took notice of the Schyllings iſlands, which I found badly laid down in the map of M. Bellin, naval engineer, engraved in 1751. Theſe iſlands ſtretch more to the W. and W. S. W. than they are deſcribed to do in that chart.

On running from Cape Clear to the Schyllings, I noticed a ſenſible current to the N. E. After doubling theſe iſlands, I kept the Cape at S. S. E. On the thirtieth, at noon, I obſerved the polar height was 52° 44′, and by calculation 14° 54′ W. longitude from Paris. At noon I ſteered N. N. E., the wind S. E., but light, and a fine ſea.

On the firſt of May I was by reckoning in lat. 53° 18′, and I found it by obſervation 53 30′, which gave a difference in twenty-four hours of twelve minutes; this could not

not have ariſen from the log-line, the knots of which were made at a diſtance of forty-ſeven feet ſix inches: this diſtance is correct, the ſea-league being reduced by the gentlemen of the academy of ſciences to 2850 toiſes, from their finding in 1672 that a degree in the celeſtial ſphere was equal to 57000 toiſes on the earth. If the third part of 2850 be taken, it will give 950 toiſes of the Chatelet at Paris, or 5700 royal feet, which divided by twelve, yields forty-ſeven feet and a half, the diſtance or interval of each knot on the log-line. The difference could not proceed from the half-minute glaſſes either, which I proved the correctneſs of by comparing them with each other, and by a watch I had which pointed the ſeconds. Theſe ſmall glaſſes, the purpoſe of which is to meaſure the diſtance paſſed over on the log-line during their run, which is half a minute, cannot be proved too frequently, for the change of weather from dry to humid alone may occaſion a conſiderable variation; and one ſingle ſecond error in half a minute will cauſe a difference of thirty leagues in a run of a thouſand. It would be uſeleſs to enter into minutiæ on this matter ſo often noticed, and particularly by M. Dechabert, at preſent captain of a frigate, who in his Journal of a Voyage to North America diſplays all the cauſes of errors in navigation. It is ſufficient to obſerve that the 12′ difference of the latitude did not ariſe either from the log-line or the half-minute glaſſes, but from the currents, which I reckon to run N. E. in this quarter, owing to the bay of Galway, the bearing of the coaſt, which is N. and S., and the S. W. winds, which almoſt continually blow in this latitude, all which ſhould neceſſarily determine the currents running to the N. E.

I found next day again a difference N. between the height by obſervation and that by reckoning, and perceived tide-banks and ſea-weed, the direction of which were N. E. and S. W., which confirmed me in my opinion. I noticed the ſame day 22° 50′ variation at ſun-ſet; a ſhort time previous to which we had a moſt pleaſing ſight. The rays of the ſun broken and reflected by dark clouds on the horizon, repreſented at a diſtance, apparently of two leagues, a rapid river, which ſeemed to precipitate itſelf in caſcades of different colours, azure, ſilver, and gold.

The third, fourth, and fifth, nothing particular occurred; the winds were variable, and I made moſt advantageous tacks: until the third, the wind had been S. E.

On the ſixth, after keeping all day a N. N. E. courſe, the wind blowing hard and freſh, with a rough ſea, the main and fore-top-ſails reefed; as ſoon as the evening came on I ſtood under bare poles, not wiſhing to make way till day-light, thinking myſelf five leagues to the S. S. E. of a ſand-bank, as deſcribed in the Dutch charts. The ſeventh, at noon, I found myſelf by obſervation in lat. 56° 41′, and long. 16° 15′ W. of Paris.

The eighth, at night, a violent gale of wind came on from the eaſt, with a dreadful ſea; it ſnowed and hailed, and was colder than what we find it at Paris in the ſharpeſt winters. I then recollected the application made by M. de Frezier in the ſame circumſtances, when doubling Cape Horn, of the thought of Horace:

Meliuſne fluctus
Ire per longos ſuit, an recentes
Carpere flores?

Or gives them more delight
A dangerous voyage o'er the diſtant main,
Or gath'ring flowers from the tranquil plain?

In truth, there is ſome difference between the ſmiling days of May, ſuch as we experience in France, and the rigorous weather we had to undergo; and when I compared the comfort of a life on ſhore with a tolerable competency, to the tireſomeneſs of the

ſea, eſpecially in bad weather, I wondered that any man enjoying a ſufficiency could be induced to truſt himſelf twice to the mercy of the winds and billows: fortunately for this condition of life, one hour of fair weather obliterates the remembrance of days of danger and toil.

The ninth, we had the ſame weather, the wind was equally boiſterous, and the ſea as tremendous as before; I ſtill kept all ſails reefed: once I attempted to ſet the main-top-gallant and the mizen, in order to paſs by day-light the latitude of another bank marked on all the Dutch charts, and the exiſtence of which the experienced pilots I had on board aſſured me had been verified by the loſs of ſeveral veſſels; but I was obliged to haul in the main-top-gallant. This bank, according to the Dutch accounts, extends from N. to S. eleven leagues, and from E. to W. about five leagues. I cauſed it to be marked on our charts. I do not affirm there being any very high ſhelving or dangerous ſand in this poſition; but I am perſuaded, from the prodigious number of birds, the multitude of them of thoſe ſpecies which only reſort to ſhallows, and from the frequent ſtriking of the waves againſt the veſſel, that there is a bank there. Several times during the day, and in the evening, I ſounded, but without finding a bottom: when exhauſted by the bad weather, and the violent rolling to which we had been ſubject for two days, I was anxious to get ſome reſt, and laid down, after ordering the officer of the watch to ſound at midnight; which was done. After letting out ſixty-five fathoms of line, they cried bottom, becauſe the lead did not draw any longer; but as the tallow with which the lead is loaded to take the impreſſion of the bottom ſhewed nothing, they thought they might have been deceived, and did not wake me, which I had ordered them to do, in caſe of finding bottom. I conjecture that we paſſed the edge of the bank, and ſathomed it, and which perſuades me was the caſe: on examining by day-light the large end of the lead to which the tallow is applied, I found adhering to it ſome fine grains of ſand, the roughneſs of which was diſtinguiſhable by the finger; and I conceive that the violent agitation of the waves might have waſhed the lead on heaving it up, and the more eaſily from the grains of ſand being very fine and mixed with mud.

The tenth and eleventh, the ſame weather ſtill continued, violent eaſt winds and very high ſea.

On the eleventh at noon, I was by reckoning in 61° 20′ latitude, and longitude 19° 30′ weſtward of Paris, in the afternoon the wind veered to the S. E.; it was leſs impetuous, I deemed the weather notwithſtanding too bad to make land, but at four o'clock ſeeing ſeveral veſſels called Doggers, which went before the wind to the N. W., I judged that they who were fiſhermen going to Iceland had fallen in the day before, and recognized the iſles of Ferro, and ſatisfied with reſpect to their poſition, they bent their courſe to fall in with the iſlands of Weſterman, which are to the S. of Iceland. The courſe of theſe doggers, and the tireſomeneſs of the bad weather, engaged me to go before the wind. I did not, like the fiſhermen, however, keep directly before the wind, but ſteered N. N. W., in order to make land higher up, that is to ſay, more to the eaſt than the Weſterman iſlands.

I kept on this tack all night, and until five the next morning, the twelfth of May, when I made cape Heckla; I then ſteered W. N. W. for the Weſterman iſlands, which I ſaw at eight o'clock. I took an altitude at noon, and from the difference of latitude by obſervation from that of bearings, I found that on the large chart of M. Bellin, publiſhed in 1767, the coaſt was laid down in general 8′ more to the S. than what it ought to be. Off cape Heckla, in the morning, we noticed the variation of the compaſs was 29°. I obſerved that cape Heckla had two points ſtretching from E. to W. We ſaw alſo mount Heckla, which is nearly in the N. W., corrected by the cape. The volcano of

of this mountain, one of the moſt conſiderable on earth, is known from its frequent, and ſometimes terrible, eruptions: towards the cloſe of this journal I ſhall ſpeak of it more particularly. Between cape Heckla and the Weſterman iſlands the land falls in in the bay, owing to which I underſtand there is a good anchorage. Above all, behind the weſtern point of cape Heckla there are excellent moorings, well ſheltered: to go up them requires a ſouth or weſterly wind. There are many paſſages between the Weſterman iſlands, but they are little known, being unfrequented, except by Iceland fiſhermen; nevertheleſs ſome fiſhing ſmacks lay off there to fiſh, and I ſaw a dogger from Dunkirk which had in a week's time caught ſeventy tons of cod there. A violent current runs between all theſe iſlands; they appeared to me to ſtretch more to the S. W. than what they are deſcribed in the French and Dutch maps. The diſtance of the Weſterman iſlands to the weſtern point of Heckla is well laid down on the chart of M. Bellin. The currents run to the W. N. W. from cape Heckla to the iſle of Birds; but in the midſt of theſe iſlands they run N. W. with dreadful eddies. At new and full moon it is high water at eleven o'clock. Between the Weſterman iſlands and the point of Iceland contiguous to the iſle of Birds, there is anchorage under ſhelter from the N. wind; but if the wind ſhould happen to change, it is neceſſary to weigh anchor immediately and put out to ſea. All this coaſt is very healthy, and there is a very fine paſſage through the middle of the iſles of Birds.

About twenty leagues to the S. of the weſtern point of Iceland there is a heap of rocks, which form a low and dangerous iſland; it was not deſcribed in our charts, but is known to the Dutch: it has often been ſeen. An inhabitant of Iceland, a man of great ſenſe and learning, who has frequently been to Copenhagen, and who has even wrote an abridged account of the natural hiſtory of Iceland, has often ſpoke to me of this dangerous iſland, only deſcribed in Dutch charts. Having ſent him a large French chart of Iceland, on which I had marked with pencil the ſituation of this heap of rocks according to the Dutch; he wrote to thank me in Latin, which was the language through the medium of which I was enabled to enjoy his learned and inſtructive converſation; and ſpeaking of this iſland this was his remark: "Lætus video te ipſum notaviſſe ſcopulos quos ipſe ſemel vidi tranſeundo." I ſee with pleaſure that you have noticed the rocks, which I ſaw alſo in ſailing by.

On the twelfth, at ſix in the evening, the winds began to blow pretty ſtrongly from the N. E. I ſteered N. W. quarter W., with no canvaſs out, in order that I might not paſs by the iſles of Birds before day-light. The wind drove us nine knots, that is to ſay, three leagues an hour, without a ſail up. At two in the morning, lying N. and S. of the moſt weſtern of the iſlands, according to reckoning, I was deſirous of carrying ſail to haul the wind; but as it was too violent, I was obliged to be content with the main and mizen-ſail part reefed.

The thirteenth, by obſervation at noon, I was in lat. 63° 15′, and by reckoning in long. 26° 15′ W. of Paris.

In the night between the thirteenth and fourteenth the wind became furious; I lowered the mizen-yard to reef in the ſail, and at one in the morning the force of the wind was ſo great that the waves could not riſe, and the ſea was covered with foam. A matter which aſtoniſhed me was to ſee in the height of the gale thouſands of birds covering the ſurface of the main, unappalled by the approach and motion of the veſſel: the force of the wind had driven them I imagined from the iſlands of Birds. This continual violent weather began to try my frigate, which was an old one; ſhe leaked, and we were obliged every two hours to keep at the pump. The apprehenſion of being obliged to make a port without being able to complete my miſſion began to give me

uneaſineſs; but on the fifth the gale abated, the thermometer, which the day before was four degrees below the freezing point, was now three degrees higher, from which I drew an auſpicious foreboding of finer weather: in effect, the wind changed to the S. E., blowing a little freſh, by eight in the evening, when I reckoned myſelf S. of the largeſt of the iſles of Birds, at eleven leagues diſtant. I ſteered towards the north to fall in with it; but I ſaw no iſland, doubtleſs from the currents to the weſt being ſtronger than what I had eſteemed them. When N. of the iſlands of Birds, which I conjectured myſelf to be from the run I had made, as well as from there being a calmer ſea, the conſequence of being between lands, I ſteered N. E. to fall in with the coaſt, and to make it the ſooner.

The ſixteenth, at eight o'clock in the morning, diſtant fifteen leagues, I deſcried mount Jeugel, bearing N. E. This mountain, or rather cape, which advances far to ſea, riſes very high above the horizon; I think it may be diſcerned in fair weather twenty leagues at ſea. It muſt be remarked, that as the high lands of Iceland are almoſt wholly and continually covered with ſnow, and reſemble each other in colour, in order to diſtinguiſh one from the other, reſpect muſt be had to their height and ſhape. Having taken the latitude under this cape, I found by its bearings that it is rightly laid down in the charts; but its northern point is not ſufficiently far ſtretched out upon them to the N. N. E. The currents here run N.; the variation 31°. Between the iſlands of Birds and cape Jeugel, there is a large bay, called the Bay of Hannefiord; it is little known to the fiſhermen, and my examination of it was reſtricted to finding that ſeveral fine rivers empty themſelves into it, and that to the S. of this bay there is an iſland under which there is good anchorage, ſheltered from all winds, in four fathoms water.

Continuing my courſe to the N. E., at two o'clock, I made the point of Brederwick, or Brederfiord. The gulph of Brederwick, which is between the point bearing that name and mount Jeugel, is very ſpacious and very deep. It is twelve leagues wide at the mouth, and receives many large rivers: there are in it many iſlands, behind which I am perſuaded there muſt be excellent anchorage, but they are not known. The fiſhermen even have not frequented this before the three laſt years: there is notwithſtanding a quantity of cod caught here. When the winds are northerly, there is a good mooring at the northern part of the bay, in from fifteen to twenty fathoms water, with a ſandy bottom: ſhips frequently anchor here, but it is ſafe only during the prevalence of northerly winds.

The ſeventeenth, in the morning, the wind eaſterly, I ſtood in towards point Brederwick, which much not be approached nearer than to two cables length, on account of a ſand or ſhelve which ſtretches out to ſea from that point. When I had doubled it, I diſtinguiſhed, notwithſtanding the fog, more than fourſcore fiſhing veſſels. I ſteered for the middle of them, conſiſting half of French, half of Dutch, and hoiſted a white and blue flag at the fore-top (the ſignal agreed upon) to make myſelf known. I ſpoke ſeveral French fiſhermen, in order to learn news of the fleet, and what the ſucceſs of the fiſhery. I ſpoke a Denmarker, from whom I learnt that he had already taken ten laſts, a conſiderable quantity for a month's fiſhing, for a laſt is fourteen tons. He added, that he had taken ſix laſts in the Weſterman iſlands, where he only ſtopped a week.

There is 32° variation at the point of Brederwick: we obſerved it many times, as well by correſponding elevations, and by meridional obſervations; for every body knows that when the polar elevation is great, the eaſtern and weſtern obſervations are not to be depended on.

The eighteenth, nineteenth, and twentieth, the winds continually varied; they were ſometimes N. E., then S. W., at times light, at others violent. In theſe latitudes there

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is always a great inſtability in the winds; they however moſtly blow N. E. and S. E. Theſe three days were employed in reconnoitering the coaſt, and in taking bearings, and making remarks on the direction of the ſhores.

The twenty-firſt the wind was W., and not perceiving more than two or three veſſels, I bore N. N. W. to ſeek the fleet. At ten o'clock in the morning, ſix or ſeven leagues from the land, I perceived the ſea white before me to the horizon. The two pilots for thoſe coaſts which I had on board aſſured me that this whiteneſs was nothing but the ſea itſelf which was frozen. I continued my courſe N. N. W. to take a nearer view, and getting within half a league of it I ſatisfied myſelf, the ſea appearing wholly frozen in one ſolid maſs, extending from the N. W. of the compaſs as far as to the North Cape, which was at E. S. E. I tacked immediately to avoid the danger, and warn the fleet of it. The year before the ſtrait between Greenland and Iceland had been entirely frozen over all the ſummer. I cannot here refrain from making ſome reflections on this frozen ſea, and on the mountains of ice which are found on the north ſea during voyages from Europe to North America, and ſometimes on doubling cape Horn. Some have been met with which, like iſlands or rather continents, appear to be many leagues in length, and elevated more than two hundred feet above the ſurface of the water. How are we to account for thoſe enormous maſſes? Every body knows that the total ceſſation of motion in inſenſible particles cauſes cold, and that cold is the immediate and true cauſe of the formation of ice; that there are other ſubordinate and accidental cauſes, ſuch as ſpirits of ſalt and nitre, which, expanded in the air, occaſion even in the midſt of ſummer ſuch extreme cold as to freeze lakes and rivers. Thus the north wind in the northern hemiſphere, and the ſouth wind in the ſouthern hemiſphere, contribute to cold and the forming of ice, becauſe they bring from the poles corpuſcles or cold particles, which penetrating the ſurfaces of bodies ſuſpend the motion of the imperceptible particles. I ſhall enter into ſome detail to develop the different cauſes of cold and ice.

I compute, in the firſt place, on the exiſtence, as a baſe, of an ætherial matter, extremely ſubtle and active, which ſurrounds and penetrates in a larger or ſmaller degree all liquid ſubſtances; if its motion be leſſened, its ſpring become weak, ſo that it be no longer able to overcome the reſiſtance of the integral parts of the liquid (that is, which cauſes the cold), ice will be produced; thus the formation of ice is the immediate reſult of the diminiſhed motion of the ſubtle matter which conſtitutes fire and heat.

Let us now examine the accidental cauſes. Salt, nitre, ſaltpetre, theſe make up the firſt accidental cauſe of the formation of ice. In places where they abound the air becomes loaded with them, they penetrate the pores of liquids like ſo many ſmall wedges, they cloſe the paſſages againſt the entrance of the groſs particles of the ſubtile matter, ſtop the motion of the imperceptible particles of liquids, and thus harden and convert them into ice. It is thus that in certain caverns, whoſe neighbourhood abounds in nitre, pyramids of ice are formed, as in a cave near the village of Chaux, five leagues from Beſançon, where three were found in the month of September 1711, of fifteen feet in height *. Wind I conſider to be the ſecond cauſe of ice.

Many perſons imagine the wind to be an obſtacle to the formation of ice; it is true, when it has much hold of an extenſive ſurface of water, as of rivers, lakes, and ſeas, it frequently hinders them from freezing while it continues to agitate them, and deprives the integral parts of the liquid from uniting together, notwithſtanding it is certain that for the moſt part wind ought to accelerate freezing, as I am about to explain. In cold weather, approaching to froſt, a dry wind, ſuch as the N. E. in our climate, contributes

* Hiſtoire de l'Acad. 1712. p. 22.

to freezing; for the air which is at reſt on the ſurface of a liquid, participates by degrees of the coldneſs thereof, and keeps at that temperature; ſo that the ſubtil matter which circulates in the interſtices of the liquid, and the motion of which is always in proportion to the motion of that which immediately ſurrounds it, is not yet ſufficiently weakened to admit of freezing taking place; but if the communication of cold to the ſurface of the liquid be haſtened by a violent impulſion of the air, which immediately adjoins its ſurface, and ſubſtituting (which the wind does) a more cold and denſe air, ſuch as is requiſite for occaſioning congelation, the ſubtil exterior matter impoſed on the liquid will be weakened, and by this means, that in the interior as well, which muſt neceſſarily loſe in its action as much as the external, in order to preſerve an equilibrium. Nevertheleſs, ſhould the freſh airs remain at reſt, freezing would not ſucceed; but if continually cold air in ſucceſſion ſhould drive away that which preceded it, until that which ſhould be of a temperature to excite freezing ſhould be in contact; it is evident, that ultimately it muſt communicate its frigidity to the liquid, and paralize the motion of the internal matter ſo as to occaſion froſt; thus wind produces froſt, as a fan excites in our frame the ſenſation of coolneſs, by expelling from around us the airs warmed by our ſecretions and breathing.

The third accidental cauſe of the formation of ice, is the diminution of the exterior heat of the ſun, ariſing from the diſtance of its ſource, the oblique and ungain diſpoſition of the ſurface which receives its rays, and, laſtly, the interpoſition of vapours, and denſe and dark atmoſphere, ſuch as a fog, which in meaſure intercepts its rays. It is to be obſerved as well, that the obliquity of the globe cauſes the ſolar rays to be intercepted by a greater column of air.

There are beſides many other accidental cauſes, ſuch as climate, local circumſtances, and the ſuppreſſion of the central aſpirations, or vapours, which are continually ariſing from the boſom of the earth. Many naturaliſts, and particularly a celebrated academician, M. Dortous de Mairan, have maintained the theory of a central fire.

From this ſhort diſſertation, and from examination of circumſtances, it is eaſy to conceive that the ſea may freeze in the neighbourhood of the poles, even as far as forty leagues from the ſhore*; and that conſiderable maſſes of ice may be met with at ſea; but how are we to account for the pyramids, the iſlands, and towering heaps of ice of ſix or eight leagues in length which are found floating? Theſe mountains of ice, formed at firſt by the union of different maſſes, owe their height to ſnow, and rain, frozen on its reaching them; and I am inclined to imagine, that when become of a certain ſize, they always increaſe in bulk. A learned Engliſhman, who wrote in the middle of the laſt century, adopted the idea of their being perpetual, eſpecially near the poles, and computed that they roſe ſo high as to cauſe the figure of the earth to be ſenſibly lengthened thereby at the extremities of its axis†: it is on this theory that he explains the elliptic appearance of the ſhadow of the earth on the diſk of the moon in two eclipſes, the one obſerved by Kepler, the other by Tycho Brahè; but all theſe reaſonings are unfounded. The ſea is not frozen round the poles for a greater diſtance than fifteen or twenty leagues from land, and the mountains of ice which various navigators have ſeen, have no more effect in altering the rotundity of the globe, than five or ſix grains of millet floating on the ſurface of a globe of four or five feet in diameter.

The twenty-ſecond, the wind was N. W., a very freſh gale, the weather foggy with a heavy ſea; and peceiving every appearance of a tempeſt, I decided on making land to take ſhelter in the gulph of Patrixfiord. At eleven in the morning, during a moment's

* Memoires de Trévoux.

† Mr. Childrey's Hiſtory of the Singularities of Scotland.

clearneſs, I ſaw ſeveral veſſels which were making for different ports to ſhield themſelves from the threatened ſtorm. For my part, I preferred the gulph of Patrixfiord, becauſe one of the directors of the Daniſh company reſided there, and the whole of the coaſt offered ſo ſecure a road that, uſing an expreſſion of Virgil, we may juſtly denominate it, "Sedes tutiſſima navi." I entered the gulph, ſounding all the way, I found continually from thirty to thirty-five fathoms water with a muddy bottom, and when I had doubled the warehouſes of the company, which I left to leeward a quarter of a league diſtant, I anchored in twenty-two fathoms, with a muddy bottom. I ſtopped with the anchor a-peak for ſometime, while we ſounded all round the frigate, and, when I found no danger to be apprehended, I let out eighty fathom of cable, and moored S. E. and N. W. I then bore N. N. E. upon the warehouſes of the director, the pyramids of ſtone which are the point of the gravel lying N. five degrees E., and the firſt point out of the gulph bearing N. W. a quarter N., five degrees N. I could have anchored nearer the ſhore more deep in the inlet, but it would not have been ſo advantageous a poſition to ſail from. The proper time to anchor is on bearing N. and S. of the point of gravel.

As ſoon as my frigate was moored, I went to the director of the Daniſh company, whom I informed that the bad weather had forced me to anchor there; that the king of France had ſent me to preſerve a proper diſcipline and good order among the fiſhermen, and to hinder their trading with the inhabitants of Iceland, or doing any thing which might be conſidered as infringing the privileges of the company. The director received me with a cool civility, and did not appear to give much credit to what I ſaid. It had been told him, that there were three French frigates in that latitude, for the purpoſe of protecting a ſmuggling trade with the inhabitants, and that we certainly had bad deſigns; but very ſoon he was diſſuaded from ſuch an opinion, and convinced of the contrary. The order which I preſerved quickly deſtroyed the wrong impreſſions which had been ſtamped on his mind reſpecting us. I always kept a guard in my row-boats, never ſuffered any but the officers to go on ſhore, and, for any thing I wanted, addreſſed myſelf to the director.

The day after my arriving in the bay, the wind being ſtill N. W., the ſky clear, and the weather ſufficiently mild, I ſounded the roadſted, and took bearings. For ſeveral days I continued the ſame employment. I determined the poſition of the principal points by means of a rule with copper mountings, furniſhed with a teleſcope, and contrived to form a plan of the bay, on which reliance may be placed, as well for luffing as for anchoring, although not laid down with the niceſt preciſion.

The twenty-ninth, at noon, a violent gale of wind aroſe from the N. E. which laſted forty-eight hours. As I was moored at the foot of a high mountain which covered the ſtation, the ſea did not run very high; but the ſwiftneſs of the clouds, and the whiſtling of the wind in the rigging ſhewed the force of the gale. The cold was intolerable; Reaumur's thermometer was on the thirtieth at 4° below o. The ſtorm drove to the entrance of the bay ſeveral large fragments of ice, detached in all probability from the frozen ocean, which I had had ſight of. The ſight of theſe iſlets of ice ſurprized me leſs than the information which I received of the road of Patrixfiord having been, as it were covered with ice on the fourteenth of May. This is however what the director told me, as well as ſeveral of my officers. The ſtorm occaſioned thirty-ſix fiſhing veſſels, French and Dutch, to go into port; ſeveral of which had received damage, which I cauſed to be repaired with diligence; ſo that in three days ſuch as had been injured were in condition to return to ſea.

SECOND

SECOND PART.

Containing a Deſcription of Iceland.

DURING my ſtay in Iceland, I neglected nothing in making myſelf acquainted with what was remarkable in this iſland, ſuch as the mode of living of its inhabitants, their manners, their religion, and government. I paid attention to all theſe, and the frequent converſations which I had with Mr. Olave, who had dwelt a long time at Patrixfiord, and who was very learned, gave me information on every ſubject which can be gratifying to the reader relative to this country. Some writers have ſpoken of this iſland but merely from the report of a few fiſhermen, or ſailors, very ill informed, and very incapable of giving due regard to things. Mr. Anderſon, burgomaſter of Hambourg, who publiſhed the natural hiſtory of the country in German, obtained all that he collected relative to Iceland from the oral teſtimony of fiſhermen. Mr. Horrebows alſo has given the world an hiſtorical and phyſical deſcription of the iſland, in the German tongue, with critical obſervations on the hiſtory of Mr. Anderſon. Theſe two authors frequently contradict each other. We have as well a deſcription of Iceland by Pieriere, author of the ſyſtem of Pædanites. Theſe are the three writers who have furniſhed us with any knowledge of Iceland; but as all their hiſtories are replete with errors, I conceive that the reader will not object to a more exact and faithful account here offered him. I ſhall follow the ſteps of Mr. Horrebows, who was born a Dane, and is beſt informed.

The iſland of Iceland is ſituated in the north ſea, between 63° and 67°, N. Latitude, and between 15° and 30° W. of Paris. The etymology of the word is derived from Ice and land. The froſt, which is ſo ſevere, and in the mountains, which are conſtantly covered with ſnow and ice, gave origin to the word.

Iceland is one hundred and thirty leagues long, of twenty-five to a degree, and ſeventy leagues wide; it is only ſeventy-eight ſea-leagues diſtant from Ferro, and thirty-five from Greenland; which, on the coaſt oppoſite to Iceland, is inacceſſible, from the ice and rocks which ſurround it.

Hiſtory does not poſitively fix the period of the diſcovery of Iceland; ſome writers have taken it to be the Thule of the ancients mentioned by Virgil, lib. I. Georg. I rather imagine this Thule to be Ireland, one hundred and ſixty-four leagues from Iceland. Angrinus Jonas, author of the Icelandic Chronicles, refutes the opinion of writers, eſpecially Pontanus, who contended for Iceland being the ancient Thule, in his *Specimen Iſlandicum.*

This iſland was diſcovered in 798 by Nadocus, who called it Sneeland, on account of the great quantity of ſnow with which it was covered. In 872 a Swede, named Gardanus, obſerved it more particularly. The following year a Norwegian pirate, called Flocco, gave it the name of Iceland; and in the year 874 Ingulf, or Ingultus, a Norwegian nobleman, took refuge here, in conſequence of having killed two barons of his country. He found it uncultivated, and very thinly inhabited; he is ſaid to have been its firſt king.

Every thing I have ſaid ſhews that Iceland was very little known, and the firſt ideas we have had of the country originated in Mr. Anderſen and Mr. Horrebows.

The maps of this iſland have been hitherto very defective. Europe had no other map of it than that of Andrew Velleius, a Dane, engraved in 1585, copied by the Dutch in 1698, and by Mr. Bellin in 1751, for his reduced chart of the North Sea. This ſkilful hydrographer, whoſe uſeful labours have furniſhed us with ſo fine a collection of plans and charts of every kind, preſented me with a map of this iſland on a

large ſcale, reduced from a greater drawn by Daniſh ſurveyors from actual obſervation, and finiſhed in 1734; I found it however very bad and highly dangerous. In my two voyages I neglected nothing in correcting it; and I flatter myſelf that all navigators will be perfectly ſatisfied with that which Mr. Bellin is about to publiſh from my remarks and obſervations.

Iceland is as it were nothing but a heap of mountains and rugged rocks, which cut each other in parallel lines nearly in the direction of the cardinal points; but between theſe rocks and mountains are fine vallies furniſhing good paſture for flocks. Theſe mountains are almoſt all barren, and continually covered with ice and ſnow. Many of the mountains are volcanic, but the moſt famous in the iſland, and even in the whole world, is that called Heckla: in 1766 it vomited forth ſuch a prodigious quantity of ſtones that the ſea was covered with them for twenty leagues from the ſhore in the ſouthern part. It is nowiſe ſurpriſing that theſe ſtones ſhould float, penetrated as they are by ſo violent a fire that it conſumes all their ſolid parts. The mountains which are continually covered with ſnow are called Joekul, or Jeckelen; they yield in the ſummer large torrents, whoſe troubled and dirty waters exhale a moſt fetid ſmell. In the neighbourhood of theſe Joekelen there are ſome mountains more lofty, but on which ice is not perpetually found, doubtleſs on account of ſaltpetre in them, which cauſes it to thaw. A ſingular circumſtance is noticeable in the Joekelen, they increaſe, diminiſh, become higher and lower daily; every paſſing moment adds to or takes from their ſhape; ſo that if deſirous of following the ſteps of any one who the day before ſhould have travelled among them, the traces are ſuddenly loſt at the bottom of an enormous accumulation of ice, which it is impoſſible to traverſe; and if it be paſſed by a circuitous route to the right or left, the ſteps of the traveller are diſtinguiſhable again at the ſame elevation, and in the ſame line as the former track, which is a proof of the non-exiſtence of the maſs of ice upon the previous day; it muſt be confeſſed this phenomenon is ſingular.

That travelling is difficult in this country, from this is eaſily deducible, there is no road for carts or carriages; the mode of travelling and tranſporting of effects is by horſes; but in many places there is no means of advancing except on foot, when the merchants are obliged to carry every thing on their backs: add to which, the traveller is not ſecure of being able to paſs one year by the ſame route he did the preceding; for thaws ſometimes ſeparate rocks in twain, which preſents an invincible obſtacle, and torrents ruſhing from the mountains, precipitate into the roads heaps of ſtones, which cover and render them impaſſable.

Iceland at this time contains more than ſeventy thouſand ſouls: before that terrible peſtilence, known by the name of the *black plague*, which ravaged the whole of the north, in the middle of the fourteenth century, it was much more populous. The Icelandic annals make no mention of this calamity, it is only known by oral tradition, that the infection exiſted in the valleys, covered with a heavy dew, and that as a preſervative from death, it was requiſite to fly to the higheſt rocks.

The maritime part is better peopled than the interior, on account of the prodigious quantity of fiſh which reſort to the coaſts, and the facility of trading with the veſſels of the compány eſtabliſhed in different ports. It would be much more populous were it not for the frequent earthquakes which have oftentimes deſtroyed numbers of the inhabitants, and whatever M. Horrebow, who ridicules M. Anderſon for his remarks on the deſtructive igneous eruptions and earthquakes may ſay, the recital of M. Horrebow himſelf will ſhew whether or no theſe fires are matters to be lightly eſteemed. This is his own relation of them. "In 1726 ſome ſhocks of an earthquake were perceived

ceived in the northern diſtricts; after theſe a conſiderable mountain, called Kraſle, began with a dreadful noiſe to vomit forth ſmoke, fire, aſhes, and ſtones. Horrible ſight for thoſe who dwelt in the neighbourhood, and particularly for two travellers who happened to be paſſing below the mountain! To them however, from there being no wind, not any accident occurred, the ignited ſtones caſt up by the mountain falling back perpendicularly. It continued burning for two or three years; and, in 1728, the fire communicated to ſome mountains of ſulphur ſituated near the volcano; they burnt for ſome time until the mineral matter had melted, and formed a river of fire which run from the mountain towards the ſouth. The inhabitants eſtabliſhed on the borders of a great lake, called *My-Varne*, three leagues diſtant from the mountain, were apprehenſive of this burning river, which continued advancing towards their abode. They took away the wood of their houſes to remove to ſome other ſpot; at length it continued its courſe, and proceeded to the farms and the lake before mentioned. There it overturned, burnt, and conſumed a farm, called Reikchild, its meadows, and two other farms, named Groff and Fragrenes, ſituated on the lower ſhore of the lake. It at length diſcharged itſelf into the lake *My-Varne* with a frightful noiſe, cauſing an ebullition, a frothy whirlpool in the higheſt degree horrible." From this deſcription of Mr. Horrebow, who certainly did not exaggerate, for he was very much inclined, being a Dane, to leſſen the phyſical vices of an iſland belonging to Denmark, ſome judgment may be formed of the volcanic eruptions, and earthquakes, to which Iceland is liable: it is certainly true, that it is ſubject to all ſorts of cataſtrophes. Mountains are ſeen to ſink in an inſtant, and lakes form; Joekelen, or ice mountains, to melt, and throw out fire, uniting the double horror of flood and conflagration.

Springs of hot water are found in ſeveral diſtricts of Iceland. Meſſrs. Horrebow and Anderſon agree upon the ſingular effects of many of theſe ſprings, but the moſt curious of all theſe fountains is that ſituated near a farm called Raycum, in the diſtrict of Huzevig. There are three hot ſprings diſtant from each other about thirty toiſes; the water boils in each alternately. They riſe from a flat ſurface; two of them throw up water from the midſt of ſtones to the height of eighteen inches: the third has a round opening of the ſize of a brewer's vat, and throws up water ten feet high. What is ſurpriſing, theſe ſprings only play alternately, and after having boiled three times, which ſerves as a notice to thoſe who are nigh to retire. It is remarkable, that when a ſtone of whatever dimenſions is caſt into them, the force of the ebullition is ſo great as to throw it back. M. Olave informed me, that the inhabitants of the neighbourhood of theſe hot ſprings uſe them for cooking their meat and fiſh, and that travellers heat water in them for making tea.

Marble is found in ſome parts of the iſland, and cryſtal frequently in the rocks. The cryſtal of Iceland poſſeſſes the faculty of doubling the objects which are ſeen through it. Mr. Horrebow conceives it to be rather a lapis ſpecularis than a cryſtal. He is miſtaken, as well as others, who have imagined it, from its leafy tiſſue, to be a ſort of talc. Some have reckoned it in the number of ſelenites; but it is demonſtrated to be a calcareous ſpar, which care muſt be taken in ranking with other ſubſtances reſembling it. The excellent work of Huygens on light may be conſulted upon this ſubject with the Memoirs of the Academy of Sciences, for the year 1710, p. 341.

Iceland contains in its bowels mines of copper and iron; and I myſelf have often found pure maſſes of theſe metals in the mountains. M. Horrebow certifies, that large lumps of ſilver are frequently found almoſt at the ſurface of the earth; this I never ſaw, nor ever heard of any body's finding.

Brimſtone

Brimſtone is met with both in the plains and mountains. It is diſcovered by the vapours riſing from the earth, and in the vicinity of hot ſprings. It is always covered with a ſtratum of ſlime, or ſand. It is of different colours, white, yellow, green, red, and blue. It is not neceſſary to dig lower than three or four feet to find exceeding good ſulphur. Thoſe places are preferred where there are ſmall eminences at the ſummit of which is a focus by which a hot vapour exhales. At a ſhort diſtance from the eminence ſulphur is met with in ſmall detached lumps, but it is under the eminence itſelf that it is found the moſt compact and in the greateſt quantity. The workmen who dig the ſulphur mines, take eſpecial care to envelop their ſhoes with coarſe woollen rags, in order to preſerve their feet from the heat; in fact the brimſtone, when freſh brought from the mine, is ſo hot, that it is impoſſible to keep it in the hand.

M. Horrebow criticiſes M. Anderſon upon his ſaying that no wood is found on the iſland; he then gives an account of two or three foreſts which he affirms are more than half a league in circumference. For my part I never ſaw any wood, and have been told that there is none other than brambles and ſmall buſhes, ſuch as thorns and juniper: but nature, always beneficent, makes up this deficiency by the prodigious quantity of wood which the ſea throws on ſhore in ſeveral parts of the iſland. On the coaſts where this advantage is wanting the inhabitants make their fires of turf, and the refuſe of fiſh, dipped in oil made from cods' liver. In many places old roots are dragged from the ground, which proves that the iſland was formerly covered with wood.

M. Olave ſhewed me pieces of a ſingular kind of wood found in ſand, and at times in the midſt of ſtones. This wood, to which he gave the Latin name of *lignum foſſile*, is black, heavy, and reſembles ebony. The Icelanders call it *ſchwartzen brand*, black brand. It is found both in broad and narrow pieces, and always among rocks ſurrounding it. This wood, if it be wood, deſerves the particular attention of naturaliſts. I give here the ſubſtance of what M. Olave ſays of it in one of his letters. "Some perſons rank foſſil wood among the claſs of petrefactions, but improperly, perhaps owing to their not having ſeen it itſelf. The nature of it, in which it bears reſemblance to wood, of ſplitting, being cut, and receiving a fine poliſh, ſufficiently proves the contrary. Nevertheleſs this foſſil genus is not wood, nor vegetable, ſince it does not poſſeſs proper veſſels for the reception of alimentary juices, nor either throws out roots below, or ſpreads its branches above the earth. It is called black brand by the Icelanders. It thruſts itſelf from the fiſſures of dirty rocks, either abounding in bark, or for the moſt part earthy; on the inſide it is curious for its very fine grain, which runs in the courſe of its length; in its moſt internal part, where moſt perfect, it is wavy, and does not yield to ebony. Hence it is turned by the inhabitants of the towns into ſtands for caſkets, tables, &c. Heavier than any other wood it ſinks in water, is not liable to rot, nor eaſy to be conſumed by fire, burning like earth. In its ſubſtance it bears reſemblance to wood, in its origin to minerals; whence can it be that in Iceland, where it was firſt produced it ſhould be ſo long unknown, and its nature for ſo long a time be unexplored? How comes it that a matter ſo curious has not been thought worthy the trouble of more diligent enquiry?" The reader may not be diſpleaſed with my producing this fragment of a letter which may ſerve to make him acquainted with the nature of this foſſil wood.

A botaniſt would find much to obſerve in Iceland. I ſhall not detail the numerous ſalutary plants which the earth produces in large quantities, many of them unknown in France; theſe matters are not in my way, but I could not refrain noticing, while I admired the wiſe bounty of Providence, that thoſe ſimples the moſt neceſſary to the inhabitants were the moſt common, ſuch as garlick, ſorrel and cochlearia; excellent preſervatives againſt the ſcurvy, which is the moſt prevalent malady of the country. Angelica

gelica as well is met with every where, it grows ſo plenteouſly that the inhabitants often live upon it themſelves, and give it to their cattle; it is moreover of a moſt exquiſite flavor, and extraordinary ſize.

But the moſt ſingular and valuable plant is that which is found upon the rocks, it is a ſpecies of moſs which very much reſembles lungwort, or ladies' wild-wort. Many Icelanders make flour of it which they prefer to wheat: it is called by them *fialla-gras*, or rock-graſs. M. Olave ſending me at the ſame time a handful of it, thus ſpeaks in praiſe of the plant in one of his letters. "I ſend to you Sir, a herb which reſembling lung's-wort ſerves among the Icelanders as a ſuccedaneum for bread, it is called Iceland moſs, and grows on the rocks of the loftier mountains, ſo that with truth we may ſay, God gives us bread from ſtones. It never grows in earth or ſoil of any deſcription, nor caſts forth roots. It affords us a noble feaſt; the powder of it, taken moſt frequently in milk, is ſo pleaſant and ſalubrious, that I prefer it to every kind of flour; it is beſides an excellent ſtomachic, and a moſt ſafe medicine in dyſentery." The reader will perceive that M. Olave, who is well verſed in botany, attributes highly ſalutary qualities to this plant.

Pulſe and fruit do not grow in Iceland, owing to the exceſſive cold, according to M. Anderſon; and notwithſtanding what M. Horrebow may ſay, who affirms that he ate currants from the garden of the governor of Beſeſted, I believe it to be as difficult to raiſe turnips in Iceland, as pine apples at Paris. It is at this time impoſſible to grow corn there; and the regulations reſpecting agriculture, which are uſed as an authority for the ſuppoſition of its having been formerly cultivated, do not prove the fact; for the wiſdom of legiſlators; every day provides for occurences that never happen.

There are no wild beaſts in Iceland. Sometimes bears are brought over on ſheets of ice from Greenland; but as ſoon as they land and are perceived, they are ſhot, or killed with javelins: they come over of different colours, black, white, ſilvered, and ſtriped, but never have time to multiply.

The only undomeſticated animals in Iceland are foxes. They are black, blue, red, and white. In order to collect a number of theſe animals the inhabitants place in the fields a dead ſheep or horſe, whoſe carcaſe exhaling a ſtrong ſmell to a great diſtance, draws together the foxes around it; ſomewhere in the neighbourhood the ſporſman fixes himſelf, having beforehand built a place from which he can ſee, without being ſeen, and whence he is enabled to kill four or five foxes at a ſhot.

There is a plenty of horſes in Iceland, of a ſmall race, coming, according to M. Anderſon, from Norway; according to M. Horrebow from Scotland; probably neither is in the right. However that may be, they are ſtrong and ſwift. In the mountains are thouſands of them, which for ſeveral years never enter a ſtable; they poſſeſs the inſtinct of breaking the ice in order to get their food. The ſaddle horſes are kept in the ſtable all the winter; but when an inhabitant wants any for labour, he ſends his ſervants into the mountains who gather them together, and take them with halters. The horſes taken in the mountains at five years old generally become the handſomeſt and moſt vigourous of any.

The Icelanders raiſe numerous flocks of ſheep. Every farm has its flock, and ſome farmers have as many as five ſheep walks. In ſome diſtricts they are left to wander all the year about, and even during the winter, in the mountains. The only precaution uſed is to ſeparate and take into folds the yearlings, who not being ſo well fleeced as the older ſheep, would not be able to ſupport the cold. Theſe animals are obliged to make a hole in the ſnow in order to get to their paſture: it is a very precarious poſſeſſion to the inhabitants, who oftentimes loſe the fruit of all their cares in an inſtant.

When it ſnows and the wind is violent whole flocks, obliged to yield to its violence, are driven to the ſea ſhore, whence a ſucceſſional tempeſt carries them off to ſea. M. Horrebow reports his having ſeen ſome which the force of the wind had taken four leagues out to ſea. It often happens when the ſheep are in the fields in winter time while it ſnows and freezes, they huddle themſelves together, their fleece then becomes frozen in ſuch manner that they cannot ſeparate, having above them more than twenty feet depth of ſnow. In this ſituation they remain until the weather allows of their being ſought for and releaſed. At times they are ſafely relieved, at others they are ſmothered by the weight of ſnow, or ſtrangled by the foxes, which are always perſecuting them. A ſingularity which appears fabulous is related by M. Anderſon. He ſays that when the ſheep are obliged to remain ſome days in the ſnow, hunger cauſes them to feed on their wool, and that they ſubſiſt themſelves in this manner until they meet with ſuccour. This I have myſelf been aſſured in the country is a fact; I was even further informed that when the farmers diſcovers any poſſeſſed of this mania, he kills them, as it is injurious to the fleece of the others, which is their only protection from the cold. The wool of the ſheep is very fine, but varies in quality according to the quarter of the iſland, which is of great extent.

Iceland has plenty of bulls and cows of ſmall ſize. The bulls have a game flavour, the cows give a quantity of milk*, ſome ten gallons a day of an excellent quality, it is both meat and drink for the ſick; ſkimmed, it forms the principal beverage of thoſe who are well, it is called then *ſyre*. It becomes ſour as it gets old; it is then eſteemed good and wholeſome: when too freſh they even mix the juice of ſorrel with it.

The game of Iceland conſiſts of woodcocks, ſnipes, and partridges. The partridge called by the natives *riper* is white, it is larger than ours, and has its feet covered with a down ſimilar to that of the rabbit: partridges in Lapland are white plumed as well, and as large as thoſe of Iceland. The Icelanders ſhoot them, or take them in nets.

Iceland is full of an infinite number of birds of prey of every kind, ſuch as eagles, vultures, hawks, falcons, owls, crows, and many others, both with diſtinguiſhing names, and without them. Of all of them the falcon is beſt worthy attention. It is met with, white, a light grey, and grey. It is well known that the falcons of Iceland are the beſt, they are larger and ſtronger than thoſe of other countries, and hawk for more than a dozen years. The King of Denmark ſends for ſome every year. He gives two guineas of our money for a grey falcon, and ſeventy ſhillings for a white one.

There is plenty of aquatic fowls, ſuch as ſwans, geeſe, ducks, plovers, &c., but the moſt remarkable, and the moſt gainful to the inhabitants is the duck which yields the eiderdown. This duck brings two-fold profit to the inhabitants; it lays excellent eggs, which it may be made to renew three times, and it gives a precious down.

This bird forms the inſide of its neſt of the down which it tears from its breaſt, afterwards it lays three or four eggs; the inhabitant to whom the neſt belongs takes away the down, and the eggs; the female ſtrips herſelf again, and lays other eggs, which a ſecond time are taken away: the male then ſtrips its breaſt of down, and the female lays eggs for the third time; but theſe are left her, ſince if taken away the third time ſhe would lay no more and would leave the diſtrict, which would be an unfortunate event, and a conſiderable loſs; as the young ones the ſucceeding year return to multiply on the place which gave them birth. M. Anderſon relates that he had been told that the Icelanders put a ſtick half a yard long into the neſt of theſe ducks, in order to make the female lay as many eggs as would cover the height of the ſtick in order to hatch them.

* For want of hay the inhabitants feed their cattle on the refuſe of fiſh boiled.

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I am ſurprized that Mr Anderſon could repeat ſuch idle tales, for my part all that I relate is credible. During our ſtay in Iceland we killed a number of theſe birds both male and female, and I remarked that the down taken from the male, which has many white feathers, is much more fine and delicate than that of the female.

The quantity of fiſh of every ſort with which Iceland abounds is aſtoniſhing: they are fiſhed for all the year about; but the moſt ſuitable ſeaſon is from March to September. The fiſhery produces herrings, cod, haddock, hollebut, ſoles, plaice, maids, mackarel, ray fiſh, &c. All theſe fiſh are well known, but we caught of them ſome unuſually large; a maid one day, for example, which weighed three hundred pounds. The moſt ſingular fiſh of this iſland is that we call the wolf-fiſh, which the Icelanders name *ſteen bit* (ſtone-eater); when opened it is always found full of little ſtones or gravel: it feeds alſo upon ſmall cod, which it is continually purſuing. As often as the weather will allow, the Icelanders go fiſhing in the bays, or even as far as a league or two to ſea; they embark for the purpoſe in ſmall boats, which are called by them *yawls*. The moſt common and moſt advantageous fiſh for the inhabitants is the cod, which they know by the name of *forſch*; it is their principal article of barter; they maintain themſelves by exchanging it againſt whatever they have occaſion for. It is this fiſh that the French and Dutch go to fiſh for in the months from March to September. The veſſels they uſe are called doggers, and are of about an hundred tons burthen. The fiſhery begins at the head-land of Bederwick, and ends at the point of Langeneſs, going round by the North cape and the iſland of Grims. The people fiſh with the hook, which is furniſhed with a bit of raw meat, or the heart of a fiſh newly taken. The French and Dutch doggers uſually fiſh at the diſtance of five or ſix leagues from ſhore, in forty to fifty fathoms water. Many veſſels even go fifteen leagues to ſea, and fiſh in one hundred fathoms water. When the cod is taken the head is cut off; it is well waſhed and cured, and afterwards put in caſks with rock or Liſbon ſalt. Thus is this fiſhery carried on, which employs annually about eighty French and two hundred Dutch ſhips. Cod fiſh thus prepared is white and delicate, rock ſalt contributing to preſerve its whiteneſs, not precipitating a dirty ſediment, like French ſalt. It is ſurpriſing, on noticing the great quantity of cod that is annually taken on the great bank, in the north, &c. that the ſea ſhould not be exhauſted; but a naturaliſt, who had the patience to enumerate the eggs of a cod, and who found in one only 9,344,000 eggs, has ſufficiently ſatisfied us that its increaſe muſt exceed its deſtruction. After the cod, the moſt common fiſh is the herring, along the coaſts, and throughout the north ſea, the fiſhery of which is infinitely productive to the hyperborean nations. This fiſh is ſo numerous, that it is calculated that the whole taken by the fiſhermen of the north, bears proportion to the number which populate the ſea as one to a million only. This fiſhery ſupports more than one hundred thouſand people in Holland. M. Huet values the annual produce of the Dutch fiſhery at twenty-five millions, of which ſeventeen millions are gain, and the expences eight. Doot affirms that in 1688 the number of four hundred and fifty thouſand Dutchmen were employed in the herring-fiſhery and its concerns.

A great number of whales are met with, particularly in the ſummer, on the coaſt of Iceland. I have ſeen twelve or fifteen together, five or ſix leagues from ſhore, north of Bird's iſland; I fired about twenty cannon-ſhot at them to exerciſe my gunners, and wounded ſeveral. In Iceland they catch a quantity of ſalmon; and in the lakes, ſuch as the myvarne, of which I have before ſpoken, numbers of excellent trout are met with, which the inhabitants dry and ſalt. Eels as well are very common; but the Icelanders have a particular antipathy to them.

After

Engraved by George Cooke.

Lady of Iceland.

After deſcribing the productions of the iſland, it is fit I ſhould notice the conſtitution, labours, and private life of the Icelanders. Theſe people are of a common ſize, and robuſt nature, enjoying their health admirably; a manly education, a ſober, frugal, and laborious life, no doubt contribute to give them this temperament. They are moſtly nimble and well made, have fine teeth, and generally light hair. The women are not of ſo ſtrong conſtitution as the men; their occupations are very light, they work and prepare the wool, and their moſt laborious employment is hay-making. Their labours are not ſo eaſy nor ſo fortunate as M. Anderſon deſcribes; they do not proceed to bathe, and reſume their different work immediately after laying-in. In the different places I reſided at in the country my ſurgeon delivered ſeveral, and always with the ſame difficulty, and I know that they always kept their bed for a week. I have even been informed that for want of midwifes, ſurgeons, and neceſſary aſſiſtance, many women are loſt. The Icelanders have no good ſurgeons, nor ſkilful phyſicians; nevertheleſs after fifty years of age they are much in need of them; it is then that they begin to be attacked by diſorders and infirmities. A man of eighty years of age is ſeldom ſeen on the iſland. They die chiefly from complaints in the breaſt, the ſcurvy, and obſtructions. They call almoſt all the diſorders which are fatal by the common title of *landſarſak*. They have an hereditary complaint differing little from the leproſy, but not contagious. It will perhaps appear ſurpriſing that the Icelanders, whom I have deſcribed ſo vigorous, ſhould become infirm ſo ſoon; but reſpect muſt be had to their rude occupations, and the ſedentary life they lead. They have no public exerciſe, no games, no dancing, and both by night and day in fiſhing are ſubject to the inclemency of the weather; or if they inhabit the interior, they never leave their home without getting wet at feet, from the number of rivulets and torrents which fall from the mountains covered with ice and ſnow. The Icelanders bring up their children with great tenderneſs, and do not wean them earlier than in France. M. Anderſon is deceived in imagining that they do not ſuckle more than eight or ten days; but (without offence to M. Horrebows) he is correct in ſtating that when a child is carried to be baptiſed, a bit of linen dipped in milk is put into its mouth: I have ſeen and can certify the truth of this. Their mode of bringing up their children ſurpriſed me; they put them in breeches at the end of two months.

I have obſerved that the life of an Icelander was ſober and frugal: the reader may form an eſtimate of it from their meals; they live during the ſummer principally on cod's heads, and in the winter on ſheep's heads: they cut off the heads of the cod to dry or ſalt the fiſh, and they are moſtly conſumed at home. A common family make a meal of three or four cods' heads boiled in ſea-water: they boil every thing. The ſheep's heads which they conſume in the winter are the remnants of the mutton they ſalt for trading with. They put them in a kind of vinegar for keeping. The vinegar is made from ſkimmed milk, the juice of ſorrel, and other ſtrong herbs. All their diſhes are cooked without either ſalt or ſpice; butter is the only ſauce: milk however is their principal food. Bread is very uncommon in Iceland; the poor are unacquainted with it, living on dried fiſh alone: thoſe in eaſy circumſtances eat bread on high days, ſuch as wedding and baptiſmal days, and where particular company viſit, &c. This bread is brought from Copenhagen: it conſiſts of broad thin cakes, or ſea-biſcuits, made of rye flour, and extremely black.

The dreſs of the Icelanders, particularly the women, is ſingular: I do not ſpeak of the officers of the law who come from Denmark, and who dreſs after the manner of their country, but only of the inhabitants of Iceland. The men dreſs in much the ſame manner as ſeamen; they have a jacket ſhaped like a coat, and a good cloth waiſtcoat, with breeches of the ſame. They have four and even ſix rows of buttons to their waiſt-

coat, and as they are always of metal, either copper or ſilver, they ſerve for ornament. The fiſhermen wear above it a coarſe ſmooth waiſtcoat, and a large ſkin jacket of leather or ſheep's ſkin; they rub this over with the oil of fiſh's liver or greaſe to keep out the rain, and preſerve it. The reſt of the body they cover with a ſort of pantaloons of leather, which ſupplies the place of breeches, ſtockings, and ſhoes. They have large flapped hats, which keep them from the inclemency of the weather when they go a fiſhing. The women wear gowns, jackets, and aprons made of a cloth manufactured in Iceland, called *wadmel:* over their jacket they wear a very wide robe, pretty much reſembling that worn by the Jeſuits, but it does not reach down ſo low as the petticoats, which are expoſed. This robe is of a different colour, moſtly black, and is named *hempe*; it is trimmed with a velvet binding, or ſome other ornament. The rich wear down the front of their hempe ſeveral ornaments of ſilver. They trim the bottom of their aprons and petticoats as well, and the ſeams of their jackets with ſilk ribbon, galloon, or velvet, of a different colour. They wear a ſtiff collar three or four fingers wide. This collar, or necklace, is always of a very fine ſtuff, or velvet embroidered with gold or ſilver. Their head-dreſs reſembles a cone, or a ſugar-loaf, of two or three feet high; it conſiſts of a kerchief of very coarſe cloth, which ſtands erect, and is covered over by another finer kerchief, forming the figure I have mentioned. Both men and women wear ſhoes of ox's or ſheep's ſkin tanned, and ſewed together by the women. Their ſhoes have no heels, but are faſtened to the inſtep by ſmall ſtraps.

Meſſrs. Horrebow and Anderſon do not agree about the dwellings of the Icelanders. The firſt, who ſees every thing in a brilliant point of view, deſcribes the houſes of the rich; the latter, who only wrote from the relation of fiſhermen frequenting the coaſts, pictures the cabins of the poor. The deſcriptions of the former are too magnificent; the account of the other is not very wide of truth. Entering a houſe, ſays M. Horrebow, you meet with a deep paſſage, ſix feet wide, at the top of which are croſs rafters roofed over. In the paſſage, from ſpace to ſpace, are round openings to admit the light; they are cloſed with ſmall panes of glaſs, or more commonly by ſmall caſk hoops, over which is ſtretched a parchment made from the bladders of bulls and cows: this parchment is called *hinne*; it is very tranſparent. At the end of this paſſage is the common entrance to the houſe. In the front of it is a room fourteen ells long by eight broad, which the Icelanders call the ſtove; this apartment is generally the working room: the women dreſs the wool, make cloaths, and do other houſehold work in it. At the end of this there is moſtly a bed-room for the maſter and miſtreſs of the houſe: above, the women ſervants ſleep, and the children. There is uſually beſides two other apartments on each ſide the paſſage; one a kitchen, another a pantry, the third a dairy, and the fourth and laſt, a bed-room near the entrance of the paſſage for the men ſervants: this apartment is with them called *Skaule*. In the roof of every room are openings as in the paſſage, for the admiſſion of light through frames of *hinne*; but the work room is ordinarily lighted through two glaſs windows: beſides theſe different apartments, the generality have beſides, adjoining the ſkaule, a parlour to receive ſtrangers in. Near the dwelling-houſe they have a ſmall building, called *forge*, where all their works are carried on. Every inhabitant, in addition to theſe, has his ſtable, his cow-houſe, and ſheep-pen. The Icelanders do not houſe their hay, but place it on a high ſpot, ſurrounding it with a ditch, ſtacked in heaps ſix feet high and ſix ſquare. They place theſe ſtacks at ſmall diſtances from each other, which they cover with turf in a ſloping direction, ſo as to carry off the rain to the ditch. This is the deſcription Mr. Horrebow gives of the common houſes of the Icelanders; afterwards he wainſcots the apartments, and ornaments them with glaſſes and furniture. The richeſt people of the country, it is true,

have

have their houſes portioned out in the manner above mentioned, but without pannelling, glaſſes, or gaudy furniture. The rooms, the bed-chambers, or even the parlours appropriated to the reception of ſtrangers, are rarely floored: a table, ſome cheſts or wardrobes, and a ſtove, theſe complete the furniture of the moſt eaſy; the poor and the fiſhermen have only a wretched cabin, half under ground, the lower part of which is occupied by cattle, and the upper part ſeparated only by a few ſtraggling planks, ſerves for the reſidence of the maſters, their children, and ſervants: for the reſt, all the houſes are covered with turf. Nevertheleſs in towns, ſuch as Hoolum and Skallholt, the houſes of the biſhops and mayors are built of brick, ſtone, and wood, and are covered with planks; but they are very expenſive, ſince almoſt all the materials are brought from Copenhagen. A heap of houſes ſcattered at diſtance is called a town with them.

The Icelanders are not ſo vicious as Mr. Anderſon relates, nor ſo virtuous by much as M. Horrebow aſſerts them: they are good-natured, mild, humane; but lazy, miſtruſtful, and drunkards. The factors of the Daniſh company, who have warehouſes on different parts of the coaſts, give them brandy in exchange for dry fiſh, wool, and other merchandize of the country; and this trade furniſhes the inhabitants with the means of inebriation. They did not appear to me to be courageous: I have however been informed that there are Icelanders among the troops of the King of Denmark: they are good ſailors for coaſting. The Dutch, who attend the fiſhery, frequently entice them to ſerve on board their veſſels. They are judicious, fond of the arts and ſciences, play much at cheſs, and are greatly attached to the game. Many of them whom I met with ſpeak Latin: numbers of them go to ſtudy at Copenhagen, and with ſucceſs. There are as well colleges at Skallholt and Hoolum, to which the Icelanders ſend their children, who moſt of them make progreſs in liberal knowledge.

In the year 1000 they were plunged in the darkneſs of idolatry. They paid divine worſhip to Jupiter, under the name of Thor, and to Mercury, under the title of Odin: theſe were their only divinities. The Catholic religion was ſome time after eſtabliſhed, but in ſucceeding times baniſhed by Chriſtian III. of Denmark: at preſent they are Lutherans of the church of Augſbourg. This doctrine was not eſtabliſhed among them without bloodſhed. A Catholic biſhop, of the ſtricteſt virtue, at the head of a powerful party, reſiſted the progreſs of error; he maintained himſelf for a long time, but became the victim of his zeal, it coſting him his life.

The Icelanders trade with a company of Copenhagen, which has an excluſive privilege, the price of a certain conſideration paid to the king. This company, which I have before mentioned, eſtabliſhes factors or directors in every part, who have warehouſes full of goods, which in courſe of the year they ſell to the inhabitants. This continual and daily ſale does not hinder a great conſumption every year at the arrival of every veſſel in either of their ports. The articles of exportation conſiſt of dry fiſh, ſalt mutton, ſalt beef, butter, fiſh oil, tallow, wool in the greaſe, wadmel, fine and coarſe jackets, woollen ſtockings and gloves, ſheep and foxes' ſkins, ſulphur, feathers, and edder-down. The articles of importation conſiſt of all ſorts of iron ware, dry bread, beer, brandy, ſtuffs, flour, fiſhing-tackle, planks, carpentery, tobacco, and horſe-ſhoes. The Icelanders barter the productions of their country againſt whatever they need. Money is ſcarcely known among them. All ſales, all contracts, in one word, all buſineſs is negociated for fiſh, and with ſuch every thing is paid for according to valuation: an ell of pig-tail tobacco is the price of a fiſh. Thus fiſh and tobacco may be conſidered as the money of the iſland.

The government of Iceland remains to be mentioned. This iſland is divided in four parts, or provinces, the northern, the eaſtern, the ſouthern, and the weſtern, governed

by bailiffs. There are eighteen or twenty cantons, each of which compriſes fifteen or ſixteen pariſhes. All theſe pariſhes are directed by two biſhops; one governs the northern, the other the ſouthern part. The ſeat of the ſovereign council is Beſſeſted, under the direction of a grand bailiff, who reſides there. The king, for the receipt of taxes, maintains a ſeneſchal at the ſame place. Theſe two principal officers render an account to the governor-general, who dwells at court. This is the whole of what is intereſting, without extending beyond the bounds I have preſcribed to myſelf, which I can ſay of Iceland. I now take up the thread of my journal.

THIRD PART.

Containing the Courſe from Iceland to Berghen; Deſcription of Berghen, of Norway, and the People ſituated North of Norway.

As I had ordered all the fiſhing veſſels which the gale of wind of the twenty-ninth of May had obliged to take ſhelter at Patrixfiord, to inform the whole fleet that I ſhould remain a fortnight longer in that road, in order to be nearer to render them aſſiſtance, and that they might not be under neceſſity of groping for me, as it were, in foggy weather, I remained in the ſame poſition to the fifteenth of June. I ſhall here remark, that any king's ſhip which may be ſent to protect the fiſhery, can never be more effectually ſerviceable than by giving a general rendezvous to all veſſels who may ſtand in need of ſuccour or repairs; for the fiſhery of Iceland is ſo extenſive, that it would require four frigates for its protection; and there are in theſe climates ſuch thick fogs, that it is ſometimes impoſſible to perceive a veſſel at the diſtance of muſket ſhot.

The fifteenth of June, in the morning, in the proſpect of a ſouth wind, I cauſed a ſmall anchor with a towing line to be heaved out to the S. S. W. to be the better enabled to raiſe it eaſily and quickly either from the frigate, or by means of my long-boat. The ſtrength of the anchorage, the depth of water, and the projection of the inlet, inclined me to this expedient. It was calm all day, I weighed my two main anchors in the afternoon, and at nine in the evening, the wind ſouthing, I ſet ſail. I did not ſhip my oared cutters before I was out the points, leſt it ſhould have fallen calm, and I have need of them to tow me. I forgot to obſerve that ſouth of the ſouthern point of Patrixfiord, outſide, is an inlet of yellow ſand, which ſerves as a mark at four leagues diſtant, and is a beacon on that ſide.

The ſixteenth, I took bearings along the coaſt. The ſeventeenth and eighteenth, the wind varied from W. N. W. to S. W. a light breeze, and foggy. The nineteenth, being in that part of the ſea, and on the preciſe ſpot where formerly were ſeveral iſlands, under the name of Goubermans, I ſounded and found one hundred and forty fathoms of water, muddy bottom, mixed with herbs.

The ſketch of theſe iſlands was taken by ſome Daniſh engineers, who drew the map of Iceland. The Islanders relate that they formerly conſiſted of nine; that they were no more than four leagues from the main iſland, and that they were ſwallowed up during an earthquake: what is certain reſpecting them is, that they are noticed in all maps, and that there now remains no veſtige of them, their former reſidence being that part of the coaſt where now is the greateſt depth of water. It is not more difficult to imagine that theſe iſlands may have been ſwallowed up by an earthquake, or owing to ſubterraneous fires, than to conceive, as does a celebrated naturaliſt *, that Iceland itſelf

* Egerhardus Ola. de Igne Subterraneo, page 14.

is

is the production of a volcano, thus being a child of the earth. The ſame day at noon, having taken the latitude, I perceived myſelf exactly upon the line of the polar circle: I was deſirous of continuing my courſe towards the north; but was ſtopped by a chain of ice which extended from the North Cape as far as the eye could diſtinguiſh to the N. W. I did not chooſe to expoſe myſelf to it with a frigate of a weak deſcription, which was leaky, and which from its length was difficult to navigate amid iſlands of ice. I thought it therefore expedient to veer about to the ſouth; and as I was obliged to go into ſome port in order to take in wood and proviſions, I preferred Berghen in Norway, whilſt the fiſhing veſſels were employed in ſeeking a paſſage between the ice to reach the iſle of Grims and the point of Langerneſs.

On the twentieth, at midnight, as we were ſteering W. S.W., to paſs at large the iſland of Birds, the wind N. E., and the weather foggy, a cry from the forecaſtle warned us of being upon the ice. At the ſame inſtant I ſaw on the ſtarboard quarter large pieces, which made part of a bank of ice, the extremities of which were before me. I immediately brought the ſhip to larboard, to double it with the wind, and paſſed ſo nigh that I ſtruck againſt ſeveral detached fragments, but without damage, although the frigate received rather rude ſhocks from the contact. It may not be uſeleſs here to mention ſome expedients which may be of ſervice to thoſe who ſhould for the firſt time be entangled in ice. It is no ways wonderful that ſuch perſons ſhould be intimidated at the ſight of theſe enormous maſſes, which will frequently break of themſelves about them with a horrid craſh: their dread however will diſappear on learning that veſſels have frequently taken ſhelter amid the ice, and that navigators frequently reſort to it for protection from ſtorms, on account of the ſea being always ſmooth when ſurrounded by it; amidſt it the veſſel rides as if in harbour: but it is requiſite to guard the outſide of the ſhip with the ends of old cables, mattraſſes, or paillaſſes. A ſhip may even be moored along-ſide a piece of ice, fixing in it iron crows of five feet long, to which ſmall cables are faſtened at head and ſtern, taking care to make them tight on board by means of the capſtan. In the abſence of iron crows, graplins and iron bars are made uſe of, which are driven into the ice with mallets. The ſails are taken in and brailed, and a ſhip rides there as well as beſide a wharf. Care muſt be taken not to moor to a maſs of ice of too much elevation, ſince ſuch are often ſubject to break and roll over. When the ſight of an opening in the ice, a change of wind, or the neighbourhood of ſhore, induce to go about, the veſſel is ſteered by help of her laſhings, the ſame as in port. If deſirous of breaking way, either to enter or to go out, two ſpare top-maſts are taken, the thicker ends of which are laſhed to the mizen-chain wales, and the two ſmall ends are made to form a fork before the prow, which fork is ſupported by laſhing under the bowſprit: this fork ſerves to ſeparate the ice in front of the veſſel. If it be not conſidered proper to uſe this tackling, a fragment of ice is choſen in a ſmall degree more elevated than the prow, which is ſteered upon under eaſy ſail, and when got under the cutwater, all ſails are ſet. This lump of ice driven by the veſſel, drives forward in its turn all thoſe which obſtruct the way of the ſhip, which by this means receives no injury.

The twenty-firſt, twenty-ſecond, and twenty-third, the wind continually varying, and the ſea running high, I ſteered S. S. W. and S. W. quarter S.; and the twenty-third, at midnight, reckoning myſelf ten leagues W. of the Birds' iſland, I ſounded and found two hundred and five fathoms water, with ſand as black as gunpowder. The quality of the bottom brought to mind what I had heard the captain of a fiſhing veſſel ſay, that he had met with a rock N. W. of Birds' iſland, at a diſtance of ſeven leagues; that he had ſounded all round and found twenty fathoms water, with a bottom of black ſand.

The reſemblance of the bottom which I found with that of the environs of the rock, ſeems to confirm the exiſtence of it.

Before leaving Iceland, it is right I ſhould impart to the reader the knowledge I was enabled to acquire of the ports ſituated weſt and north of the iſland. I ſhall begin with Adelfiord, north of Luſbaye, and ſhall continue the ſame to the point of Langerneſs. Adelfiord, or the bay which bears that name, is very extenſive and deep, but the anchorage is bad for large veſſels, as the coaſt is rugged, and it is neceſſary to anchor cloſe to the ſhore. The fiſhing veſſels lying at anchor have the poop ſo near the land, that the ſailors go on ſhore by means of a plank laid from the ſhip's ſide.

The bay of Direfiord is as fine and as large as that of Luſbaye; there is no danger in entering it, care being taken of the ſqualls of wind which come from the gorges, as I before mentioned in ſpeaking of Patrixfiord. The anchorage is good every where for veſſels of war. At the bottom of the bay are two points in the ſhape of a ſugar-loaf, which at ſea are taken for two pyramidal iſlands, and which mark the bay of Direfiord on coming from ſea.

The bay of Weſt Norderfiord is as extenſive as the preceding; there is good anchorage in the firſt inlet to larboard on entering, but it is ſuitable to thoſe veſſels only which mean to ſail again directly, for ſhelter it is better to proceed higher up. In the middle of the bay there is twenty five fathoms water; but at the extremity the anchorage is in ſixteen to eighteen fathoms, with good bottom: there are rocks both on the larboard and ſtarboard quarter on entering, but they are all above water.

The bay of Pikhol is too open, it is fit only for fiſhing veſſels or corvettes, the anchorage is cloſe to the miniſter's houſe, where there is ſhelter under the north point.

The bay of Bolk-Bogt is more properly a gulph than a bay; it is little known. The fiſhermen ſeldom proceed up it; notwithſtanding an owner or maſter told me, that he had once ſailed to the bottom of the bay, and that behind a point of land which projects, he found moſt excellent anchorage below the houſe of the factor of the company. He even ſaid, if he were obliged to winter in Iceland, he ſhould prefer this ſpot to any.

The roads of Seertel Bay are very fine, there is excellent anchorage for all ſhipping: a ſhip may anchor to ſtarboard on entering after doubling a point, but the beſt anchorage is at the foot of a remarkable cliff at the bottom of the Roadſted. Theſe roads are diſtinguiſhable by a hill of grey ſand, perceptible at a great diſtance.

In the bay of Radkol there is anchorage in twelve fathoms water, with a ſandy bottom. There is ſhelter from the wind on the ſouth and the eaſt, but with a N. or W. wind a veſſel would be much expoſed.

The roads of Rakbaye are very large and very good; fifty veſſels of war might eaſily anchor in them; the beſt place for caſting anchor is at the extremity of the bay, on the ſouth ſide, half a league from ſhore. Drift wood is met with here, caſt on ſhore by the ſea.

In going out of Rakbaye the North Cape is on the ſtarboard quarter. Eaſtward of the North Cape, on the ſide of the gulph of Orgel Bokt, there is a caſcade or river, which falls in large volumes of foam, and with a conſiderable noiſe; it is a land's mark on the coaſt. This caſcade or river is called Watalope.

In the whole of the gulph of Orgel Bogt, there is only the bay of eaſt Nordefiord, where a frigate can take refuge; its anchorage is to ſtarboard on entering, two cables' length from the cabins of the Icelanders. The fiſhermen go for anchorage to the bottom of the bay; but they muſt paſs a bar, over which at low water there is only twelve feet depth. The ſea throws wood on ſhore here alſo; a river empties itſelf into this

this bay which abounds in ſalmon. At the eaſtern point of the gulph there is a reef, or chain of rocks, which proceeds farther out than is noticed in the Dutch maps. Eaſtward of this reef four iſlands are diſtinguiſhed pretty high, and very lofty, the fourth is at the entrance of Klipbaye, where there is anchorage cloſe to ſhore, either on the ſtarboard or larboard quarter; but heed muſt be taken of a large bank in the middle of the bay, and which does not allow of luffing. Eaſtward of the four iſlands a large flat iſland is ſeen, called Ulakiland, at the foot of which weſtward there is an anchorage. This iſland is in the S. one quarter S. E. corrected, from the iſle of Grims, where the anchorage is in the ſouthern part. There is ſhelter from the north, but a veſſel there muſt be prepared to ſail upon its blowing S. E. or S. W. The tides run very ſtrong, the direction of them E. and W. Good anchorage is found at the point of Roodchoke, in ten fathoms, with ſandy bottom, ſouth of a round rock, which is ſafe and very diſtingſhable; ſheltered from S. E. winds. There is beſides good anchorage at Oudeman, ſafe from all winds, to S., but when it veers to the N. the ſhip muſt change her birth. This is the ſummary of what I learned from experience in my own veſſel, and from ſeveral fiſhermen with whom I frequently converſed on this ſubject. Lower down I ſhall ſpeak of the roads and ports of the eaſt ſide. I do not conceive that any one will be ſurpriſed in reading this journal at noticing my entrance, whether by night or day into all the ports of Iceland. No one is ignorant that under the poles there is ſix months of day, and the ſame length of night; that the nearer the poles are approached, the longer the days and the nights, according to the ſeaſon of the year. Every one knows alſo, that the ſun gives its light by refraction when below the horizon; and that this is called twilight; that that which precedes the riſing is called the dawn, or morning twilight, and that that follows its ſetting is named the twilight, or evening twilight; moreover, that the farther the obſerver proceeds from the equator, the longer the twilight. Thus it may readily be conceived, that in Iceland, which extends northward as far as to the polar circle, by favour of the twilight a continual day reigns from May to September, ſo as to enable a perſon to read and write at midnight, and that the ſun does not ſet below the horizon for eight days before and eight days after the ſummer ſolſtice: that is to ſay, from the twelfth of June to the firſt of July.

The twenty-fourth the wind varied, making the entire circle of the compaſs; ſometimes gentle and at others violent, but continually a heavy ſea. I ſteered S. one quarter S. W.; and the twenty-fifth at noon was in latitude 60° 58′, and longitude W. of Paris 19° 30′. By the map I perceived I was 3° E. of Ferro, 110 leagues diſtant, according to the chart of Mr. Bellin; and acording to the Dutch charts, from the ſame ſtation, Ferro bore E. N. E. 42 leagues diſtant, making a difference of 68 leagues, or nearly 7° in that latitude. The rock at S. of theſe iſlands, according to Mr. Bellin, is in latitude 61° 17′: according to the Dutch 61° 44′: that is to ſay, 27° more N. Theſe differences as well in latitude as longitude ſurpriſed me, and made me beſitate as to the courſe to ſteer. I reſolved, at length, to make the ſouthern point of the iſles of Ferro, according to the latitude deſcribed by Mr. Bellin. I ſteered accordingly and obſerved the variation of the needle in the evening to be the ſame as the day before, 23° 30′.

The twenty-ſixth at noon, having made 43 leagues of way under a freſh breeze from the E. S. E., I obſerved the latitude to be the ſame as the day before, 60° 58′, and the longitude 14° 58′. As I had no difference of latitude after having ſteered E. S. E. for twenty-four hours with great circumſpection, I conjectured that the difference aroſe from two points of wind, or 22° 30′.

The twenty-ſeventh, at three o'clock in the morning, having run E. one quarter S. E. with a N. and N. N. W. wind from the twenty-ſixth at noon, the wind freſh with a high ſea,

ſea, we made the Ferro Iſles. I paſſed two leagues ſouth of a rock laying ſouth of the iſlands, and diſtant from them by appearance about a league. I perceived breakers at half a league from this rock. At noon I took an elevation under the land, and found, after making a back obſervation to try my former by, after noticing the bearing, and caſting my log-book, that theſe iſlands are correctly laid down in Mr. Bellin's map. We found 18° of variation from two correſponding elevations. After doubling the iſles of Ferro, I directed my courſe to the northward to make the Shetland Iſles; but not falling in with them on the twenty-eighth, at four in the morning, and judging by the way I had made, that I muſt have paſſed them, (for I had continually ſteered E. one quarter S. E.) I tacked to the S. E. one quarter E. to proceed to Berghen. I believe that the currents carried me towards the north in my paſſage from the iſles of Ferro to Shetland, I muſt obſerve as well that in the paſſage I had two floods to one ebb tide.

The twenty-ninth the wind freſh and ſtrong from the N. W., the ſea very heavy, with a thick fog. In ſuch weather I was not deſirous of encountering the coaſts of Norway. I kept under main and foreſail, and employed myſelf in taking ſoundings, waiting for more favourable weather.

The thirtieth, at five o'clock in the morning, the weather brightening and the wind becoming lighter, I ſteered E. S. E. with a north wind to make land; but obſerving at noon that I was in latitude 59° 12′, I ſaw that I was too far to S. to enter by the way of Cruxfiord, which is the ſhorteſt and the moſt uſual paſſage; I worked to windward, it blew N., and I ſteered N. E. As I was by obſervation 18′ more to the ſouth than by my log, I ſought for the cauſe of this difference in the poſition of the iſlands, and the coaſts of the north, which, by the manner of their lying, govern the following courſe of currents. At flood the tide flows from the W. S. W. upon the iſles of Shetland, and, changing its direction on ebbing, flows S. S. E. varying its courſe according to the line of the coaſt, as far as to the ſtraights of Dover, but the waves meeting here with another flood, flow back, and throw themſelves upon the coaſts of Jutland, which ſends them back to Cape Derneus, from which they take their courſe, direction, and motion, according to the poſition of the coaſts of Norway: this, according to my opinion, is the cauſe of the current, which runs always to the ſouth on the coaſts of Shetland, and that which runs always north on thoſe of Norway: this general movement not interfering with the ebb and flow incident to each particular ſpot. It is here that I ſhould notice the obſervations I made for knowing with certainty, by ſounding, whether a ſhip be approaching the coaſt of Shetland, or Norway, which is of conſequence, and intereſting for thoſe veſſels which cruiſe or navigate theſe ſeas, almoſt continually over ſhadowed with fogs.

When in the middle of the channel between the iſles of Shetland and the coaſt of Norway, or but little diſtant from the middle, there are 65, 70, and 75 fathoms of water, clean and fine ſand. On nearing Shetland the depth does not diminiſh, it rather increaſes in different places; but the bottom is different, the ſand is larger, darker, and mixed more with gravel the cloſer you get to ſhore. On the contrary, when approaching the coaſts of Norway, the depth of water ſenſibly increaſes, the bottom changes, becoming more muddy, and this mud becomes leſs dark as you go near the coaſt of Norway. This channel is called the Great Tun by mariners, and the paſſage between the Arcades and the Shetland Iſles in the north or ſouth of the little iſland Fairehil, which is in the middle, is called the Little Tun.

The firſt of July, at three o'clock in the morning, having ſteered E. N. E. with very little wind from the N. from the preceding noon, I made land; it was perfectly calm,

and nature was as it were aſleep; but the ſun appearing above the horizon re-animated her, and brought us a breeze; this is what is frequently experienced in the torrid zone; the reaſon of it is this.

During the whole of the day, the ſun by its heat expands and cauſes to riſe from the plains, and above all from the ſurface of the ſea, aqueous particles and bubbles of rarified air, which it attracts to a diſtance from the earth. Thoſe which aſcend the laſt, fall again almoſt immediately after ſun-ſet, they approach each other in their fall, and cauſe that firſt coolneſs of the evening which is called ſerenity; but all the other particles which in the long courſe of the day, have ſurmounted the groſs airs, and become in equilibrium with the firſt ſtrata of that air in a ſuperior region, remain ſuſpended there during the calm of night; at ſun riſing the firſt rays of heat being felt by the chilled and contracted air, neceſſarily dilute it. One maſs of air expanded by the heat drives on another, which meets with reſiſtance from a third; this motion of the air becomes a wind, and the atmoſphere is affected by it in a leſs or greater degree.

At eight o'clock, being yet three leagues from ſhore, ſome Norwegian pilots came on board, who informed me that I was a great deal to the ſouth of the paſſage of Cruxfiord, but that there was a paſſage two leagues north of where I was, and that if by luffing, I could get up theſe two leagues, (for the wind was north,) they would take me into good anchorage, where I might wait for a ſouth wind to get into Berghen. I luffed therefore to head the wind. At noon I obſerved the latitude; and at four o'clock a ſtorm aroſe, which determined the pilots to make the land, in order to ſeek the paſſage to the north of the iſle of Bommel; through which they ſteered me to anchor at Ingeſon. As the anchorage is difficult on the coaſt of Norway, that is to ſay, on the currents of Berghen, and as they require great precaution, I ſhall detail the methods I made uſe of in anchoring; it would be proper to inform the reader firſt, what obſervations I made on the coaſt.

I firſt aſſured myſelf by three obſervations of the variation: the one an eaſtern, the other by azimuth, and the third meridional. The agreement of theſe three obſervations ſhewed me that the variation of the needle was 17° 50′ on the coaſt of Norway, under the iſle of Bommel. I took the latitude at noon, and from the bearings I found the iſle of Bommel to be 15′ more north, than what it is ſet down in the large chart of the Neptune. On my ſecond voyage, I made the ſame obſervation, and found the whole of the coaſt of Norway, to be 15′ more north, than what it is deſcribed in the above-mentioned chart. In ſhort, I remarked that the exterior grounds, and bed of the channel of Berghen, almoſt wholly reſemble each other. There are every where rocks of the ſame elevation, faſhioned and craggy alike; which renders making land a difficult matter, as nothing ſhort of perfect experience can enable a perſon to know where to make for land. It may be ſaid that in an extent of twelve leagues of coaſt on the ſide where I made for ſhore, there is only mount Bommel in the iſland of that name, that is diſtinguiſhable from others. The objects of the continent ſeldom ſerve for land-marks, on account of their being generally hid by fogs, and covered with ſnow, beſides being greatly in land. There are ſeveral paſſages to enter the canal or river of Berghen. From the iſle of Schuttneſs to the town of Berghen, is ſixteen Daniſh miles, about ninety Engliſh, and in this extent of the coaſt, there are eight paſſages to enter the canal. In coming from the ſea to the north of Berghen, there are alſo two paſſages much frequented, the moſt northerly of which is only ſix Daniſh miles from the town. North of theſe are ſome other paſſages, but they are ſo little known, ſo little frequented, and ſo difficult, that they are not worth mentioning.

Theſe are the names of all the paſſages beginning with the moſt ſoutherly; 1° Stavangerfiord near Stavanger, ſixteen Daniſh miles from Berghen; 2° Schuttneſs, which is the beginning of the canals, fourteen miles diſtant; 3° Udeiro thirteen miles; 4° Bommelfiord eleven miles; 5° Solmenfiord five miles; 6° Papefiord four miles; 7° Cruixfiord three miles; 8° Jettefiord nearly three miles weſt of the town.

The two paſſages or openings which are frequented at the north of the town, are 1° Herlefiord; this paſſage is between two iſlands advancing ſome diſtance into the ſea, known by the names of Henne and Fever, five miles from the town; 2° Foensfiord; there is in the middle of the ſecond paſſage a little lofty iſland, called Holmen Graac. It ſerves as a land mark: this paſſage is ſix miles from Berghen. It will be ſeen by what I have obſerved that it is better to make land ſouth of the town, on account of their being in that quarter more paſſages than in the north, beſides which, they are more practicable, and the currents run towards the north, the whole length of the coaſt; in other reſpects the wind muſt decide; the beſt latitude at which to make land I conſider to be 59° 40′.

A veſſel may make for land without apprehenſion; it is very ſafe, the coaſt of Norway preſents a dreadful aſpect every where, it is a continued chain of rocks, the ſight of which makes one ſhudder; but nothing ſhould prevent making for them; for as I before obſerved, a ſhip may range very cloſe under them, and when at two leagues from ſhore, pilots always come out, unleſs there happens a ſtorm; but in fine weather they proceed even as far as three leagues to get on board a ſhip: they row with all their might as well, to be firſt, for the firſt boat which touches the veſſel with an oar, has a right to furniſh a pilot, the others then return, but not without aſking for biſcuit or brandy, of which they are extremely fond.

I have before obſerved that the land may be approached at all times, however when the weather is foggy, with a ſtrong W. N. W. wind, unleſs the caſe were urgent I would not adviſe making for ſhore, ſeeing that there is no ſhifting from a W. N. W. wind.

I return to my anchorage at Ingeſon, and as all anchoring in the river of Berghen requires care, I ſhall deſcribe the method I uſed at Ingeſon; it will ſerve as inſtruction for all veſſels which may be going to Berghen; that port, which of all in the North Sea yields the greateſt reſources, there being a maſt yard, a capital rope warehouſe, and plenty of proviſions. By chance a veſſel may be obliged to enter the paſſages without pilots, either owing to the ſuperiority of an enemy's veſſel, or to ſtorms, and what I am about to obſerve will be of great utility.

On coming from ſea with a north wind, keeping Mount Bommel at ſix to eight leagues diſtant at S. E. the ſhip muſt continue its way ſteering as cloſe to the wind as poſſible, in order to keep before the wind, and north of the iſle of Bommel. At about a league from ſhore, an opening will be ſeen between the rocks, which is the paſſage of *Solmenfiord, five miles from Berghen. Imagining the reader at the entrance of the paſſage I recommend him the expedient I made uſe of. The wind was northerly, I kept cloſe to the iſlets and rocks in the north, which I paſſed at two cables' length, in order to avoid the ſtones which are in the middle of the paſſage under water, and which I left to ſtarboard going before the wind. At a quarter of a league from the iſle of Rootholm, I made in ſhore to coaſt round this iſland, till I ſhould diſcover an opening to leeward. I then bore up for the inlet ſteering S. and S. quarter S. E. I went up this creek, and when about a cable's length from the bottom of the bay, I caſt anchor to larboard, I put the helm to ſtarboard, to round to the wind, letting the cable run. As

* This paſſage is nearly a league wide; on my ſecond voyage I luffed up it.

ſoon as I had anchored, and the frigate rode at her moorings, I ſent a tow-rope aſhore to the eaſtward, which was laſhed aſtern to ſtarboard: by this means the veſſel does not lay with the current, but it is ſecure. The main-anchor is heaved into eighteen fathom water, ſand and gravelly bottom; there is ſix fathoms below the veſſel, and as the bottom riſes in a ſloping manner, there does not need more than forty-five fathoms of cable out, compriſing the platting. The tow-line is moored to a rock on ſhore cut for the purpoſe. Great care muſt be taken to plat the cable, and examine it often, for there are rocks in many places at the bottom. The tide does not run ſtrong. The difference of high and low water is eight feet; the tides are of ſix hours. I forgot to obſerve that five-and-twenty fathoms of bitter muſt be uſed in anchoring, and to recommend to be always ready to let out cable ſo as to ride eaſy on the wind. Moreover it will be neceſſary to have another anchor in reſerve, ready to be caſt, in caſe the firſt ſhould not hold. It is needleſs to adviſe the coming to an anchor with as little wind as poſſible. I obſerved that a veſſel is ſufficiently well moored with a tow-rope aſtern; for as ſoon as the wind ſouths, ſhe ſets ſail for Berghen. If the wind ſhould happen to blow S. S. W., it would be prudent to have a ſecond tow-rope to larboard, on the weſtern ſide.

When about to ſail, a veſſel muſt pay out tow-rope while heaving at the capſtan. The anchor is weighed and catted, the topſails and mizen-topſails are then tallied, the tow-rope is paid out, or cut, and an oared boat ſent aſhore to bring it after.

The ſecond and third, we had a dead calm. I employed myſelf in taking a draft of this road, or rather this baſon. At muſquet ſhot from this anchorage, as well as near all others along the river, you meet with a tavern, provided with meat, fiſh, eggs, milk, beer, and in ſhort every thing the country affords.

The fourth, at nine in the evening the wind S. with fog, we ſailed from Ingeſon for Berghen. We made nearly eight leagues among the rocks, which we paſſed very cloſe to, during a thick fog that almoſt entirely obſcured the feeble glimmering of twilight. On the road the pilots made me notice ſeveral anchorages, both to ſtarboard and larboard, as well for large, as ſmall veſſels.

The fifth, at four o'clock in the morning, the wind at S. E. but weak, we anchored at Behoriaven, nearly three ſea leagues from Berghen. The ſtarboard anchor was caſt in twenty fathoms water, ſandy bottom, with flint ſtones. As ſoon as the frigate rounded, I ſent two tow-ropes a-ſhore to two iron rings fixed for the purpoſe of veſſels to moor to, there are ſimilar rings along all the canals of Berghen, wherever there is anchorage; for it muſt not be conceived that a veſſel can anchor any where although, encloſed by land and rocks; ſometimes it is requiſite to proceed three or four leagues to get to an anchor, on account of their being not leſs than eighty to one hundred fathoms water between one anchorage and another. At two o'clock in the afternoon we had a weak S. wind, and ſailed, when under ſail it veered to W. N. W. and N. W. I had great difficulty in doubling the laſt point, which forms the entrance of the bay of Berghen on the ſide of the weſt, at which point there is a buoy to mark a ſunken rock. In the middle of the bay, a league from the anchorage, we experienced a violent current which prevented our advancing, and kept us as it were at anchor, notwithſtanding we had a good wind, and all ſails ſet; this current was occaſioned by the ebb-tide emptying itſelf from the two bays, the one north, the other ſouth, of the citadel. I manned all the boats of the frigate, and ſent them before to tow her. By dint of rowing, with all ſails ſet, I made ſhift to paſs this current, which otherwiſe might have carried me on to the north ſhore. At ſix o'clock I anchored in nine fathoms, with a ſandy bottom, and the frigate lying with her head to windward, after paying out forty fathoms of cable, ſtruck on a flat rock, the only danger to be apprehended in this roadſtead: there were fourteen

feet two inches of water on the rock, but the draft of the frigate was fourteen feet three, and it yet wanted four or five inches of low water, I immediately laſhed a tow-rope to a dead-head, which was out with my anchor, and which ſerved to ſhew where to weigh it. I pumped out my water, and heaved at the tow-rope, as well as the cable, but all in vain. We were obliged to wait for the flood-tide. This accident would not have happened if the Norwegian pilots had caſt anchor more to the north, as I wiſhed them in ſixteen fathoms water. It only occaſioned us however a great deal of trouble, and owing to the care of M. Duchatel and my officers, we had no confuſion, which in ſimilar circumſtances is extraordinary. When afloat I heaved my main-anchor and got to the entrance of the port, my great ſtream-anchor was in ten fathoms water, ſand, and gravelly bottom; my bower-anchor, S. E. of the firſt in ſix fathoms, muddy bottom. I ſent a tow-line a-ſhore, which I moored to the poſt of the Corps de Garde, and a ſmall anchor to N. E. Theſe precautions made me perfectly ſecure, but I was ſurrounded by a number of merchant veſſels, and that is not a proper mooring for a large frigate. Ships of war in general anchor at Sandvick, they go entirely into port, where they ride in four moorings; but when deſirous of going thus far into port, and get within the citadel, it is required that the powder ſhould be landed.

To avoid the rock on which I ſtruck, it is eſſential to notice a buoy which points out the place it lays in. What deceived my experienced pilots, was the buoy's having been carried away two hours before by a Dutch veſſel, which ſtruck as well as I did on the ſame rock; but in caſe the buoy ſhould not be ſeen, it muſt be remembered that the rock lays S. E. half a cable's diſtance from a buoy, which ſerves as a dead-head to moor to.

As ſoon as I had arrived, I ſent an officer to pay my reſpects to the governor of the town, who lives in the caſtle, and the next day accompanied by my ſtaff I paid him a viſit. We went as well to ſee Mr. Deſchiel, grand bailiff of the city, and territory of Berghen. He loaded us with kindneſs, and offered to render every ſervice of which we ſtood in need. We did not meet with ſo favourable a reception from the people. The merchants, workmen, and all thoſe to whom we had recourſe for what the frigate wanted, treated us coolly. They fled before us in the ſtreets, and even refuſed in the public markets to ſell to my maitre d'hotel. We owed this reception to the bad conduct of ſome captains of privateers, who under the title, and in the uniform of his majeſty's officers, which they had the impudence to take upon them, had during the laſt war committed ſo many exceſſes in this town, that the grand bailiff, fearing we might meet with inſult, thought right to publiſh that we were truly poſſeſſed of the king's commiſſion, recommending civility towards us. Our mode of acting and the diſcipline we maintained, ſoon ſhewed them who we were. A ſailor having ſtolen a ſilver ſpoon out of an ale-houſe in a fit of drunkenneſs, I cauſed him to be dipped from the main-yard for three ſucceſſive days, and but for the interceſſion of all the ladies at a grand ſupper given by Mad. Deſchiel, his puniſhment would have been of longer duration. I gave a dinner on board the frigate to Mad. Deſchiel, and all the principal ladies, to the ſtaff-major, the officers in garriſon, and all the principal perſons of the place. This dinner which was ſucceeded by a ball, ſpread a gaiety through every quarter of the town, where the healths of the Kings of France and Denmark were drank, under the diſcharge of the cannon of the frigate; notwithſtanding this, the people could with difficulty forget, that a Frenchman, the captain of a fine veſſel, or who repreſented himſelf in that character, had threatened upon a refuſal of ſome indiſcreet demand, to fire upon the citadel, and that upon ſeveral occaſions their women had met with inſult from them.

I cannot

I cannot here refrain from a reflection on the high idea that the public entertains of certain intriguers, whose merit consists in their praising themselves; who propose the grandest schemes, because they run no other risk than that of falling back into the nothing from which they are studious of raising themselves, and whom we every day see fail in their enterprizes with shame, although supported by an ignorant cabal, prejudiced against the royal navy. The proofs of this blind prevention are but too widely spread. Even in the Encyclopedia most indecent absurdities are to be founded under the head marine. An abstract from a work intituled *Reflexions of a Citizen on the Navy*, is inserted there. This is the work of an officer, a merchant of Dieppe. The rank of this man sufficiently shews that he is a blackener of the characters of his majesty's officers. He says, "the gentleman sailor takes no pride in his occupation, he despises seamanship, &c." I must however do justice to his sentiments, when speaking of war and armaments, "The captain" he says, "ought to be compleatly master of the fighting his ship, &c. To wage war with the English, their commerce must be attacked, and ourselves be satisfied with preserving our possessions; it is precisely playing with a chance of losing, and none of gaining, to act otherwise: it is against the English commerce alone, that we should wage war; no durable peace with this nation can be expected without following this polity. Let England tremble for her trade in a war with us, this is the important point. The enemy in the war of 1744, made considerable insurances on our merchant vessels, in this war few, and those at very heavy premiums. Why so, because they imagined that a war on the continent would cause us to neglect our navy, and they were in the right; it is the finances alone of the enemy which support her navy, and its finances depend upon her trade; let us then make war on her commerce, and on her commerce only. Take a colony from the English, they murmur; ruin their trade, they will revolt. We have three hundred leagues of sea-coast to protect. This case requires a considerable navy—what! Are vessels requisite to guard our shores? Delusive error! We want soldiers only for that purpose, a hundred and fifty thousand men shall be put in arms for saving's sake, nevertheless the shores will be insulted; a hundred and fifty thousand men are clad in arms, and it is evident that twenty-five sail of the line at Brest, and fifteen thousand men near that place, will be sufficient to prevent any such consequence; nay, any thing except the prejudice in favour of soldiers." It is visible that this seaman is possessed of judgment, although he does not display the necessity of a navy, with equal eloquence with Mr. Thomas, in his eulogy of Duguay Trouin. However, that orator guided by an excusable prejudice, seeing that he had never frequented the sea-ports of his majesty; lets escape him some critiques in favour of the merchant vessels, to the injury of the king's ships. Labouring under the same prejudice, a monk has manufactured an historical journal of a voyage to the Madeira islands in 1763 and 1764. The editor of this insipid journal, printed at Berlin in 1769, seems to have left his convent for no other purpose than to reap in another hemisphere an ample harvest of lies, and invectives. Returning to Europe, he takes pleasure in pouring the coarse poison of his graceless pen upon the navy, in a digression which contains as many blunders as phrases. "On the fifteenth of June 1764," says the stupid son of St. Benoit, "a vessel is seen to windward in the N. W., *the flag and pennant is hoisted, a flag is plaited and hoisted, and we lay close to the wind*; in spite of all these pretended signals, *the vessel continues its course.*" This learned Cenobite imagines that a vessel, who should so act can be no other than a French vessel. Upon this his bile inflames, his *love for his country and the commonweal* puts in his mouth a violent diatribe against a navy which he ought to respect; but in what order has this monk learnt, that a love for one's country is shown by exclaiming in a Hottentot dialect, that "the license of the reds, causes the sla-

very of the blues, that the officers of the royal navy poſſeſs prejudices which raiſe them much above the profeſſion of ſailors, and make them imagine it unneceſſary to learn the art of ſeamanſhip in order to practiſe it, &c." If this paper-ſtainer had read the ordonnances of the marine, he would have known that there are ſchools eſtabliſhed for the education of young people in this art; if he had been at any of the ſea-ports, he muſt have ſeen officers applying themſelves to the theory, and anxiouſly deſirous of reducing this theory to practice; if he had taken the trouble to ſeek for information, he might have learnt that it is neceſſary before a man can become a captain of a merchant veſſel, that he ſhould have made at leaſt two voyages on board of a king's ſhip, and obtain ſatisfactory credentials from his commanders; which pre-ſuppoſes that it is on board theſe veſſels alone that proper diſcipline, and a perfect knowledge of the neceſſary ſubordination and ſervice at ſea, can be acquired; and that the officers in the navy are the competent judges of the merchants' captains: had he ſailed on board veſſels truly commanded by his majeſty's officers, he would not have affirmed that "every veſſel is obliged to ſtrike when a king's ſhip orders her to do ſo, by firing a gun and bringing round the pennant to the maſt, at the part it ought to be, according to the rank of the officer commanding the king's ſhip." He would have known that the pennant is hoiſted, and not brought round, and that a merchant veſſel is not obliged to ſtrike, but to bring to, in order to receive orders. If he had reſided in a ſea-port, he might have learnt the language of a profeſſion which, had he poſſeſſed any modeſty, he muſt have been perſuaded is a neceſſary acquiſition to him who profeſſes to give leſſons; he would have ſeen how highly the Barts, the Duguai Trouins, and the Caſſards are reſpected: all theſe great men were entitled to the ſtations they held on board the king's ſhips; they had fought in deſperate engagements, made many ſkilful manœuvres, taken ſhips of war from the enemy; let any one preſent himſelf after ſuch ſtriking recommendations, and certainly he will be received with as much welcome as diſtinction. Notwithſtanding the officers of the royal navy are much above ſuch paltry aſperſions as thoſe lanced from ſo palſied an arm, as that of the traveller to the Malucca iſlands, I have not been able to reſtrain the firſt boilings of anger which the reading of the faſtidious volume of that monk-errant occaſioned me.

During the ſtay I made at Berghen I ſounded, and cauſed to be ſounded, the port, the roadſted, and the neighbourhood of the town; reſpecting which I ſhall ſay more in ſucceſſion, intending now to give a deſcription of the town and territory of Berghen. I ſhall even ſay ſomething of Denmark, Norway, the Laplanders, the Samoiedes, and other people of the north of this ſecond kingdom, which are but little known, and of whom many fabulous tales have been related. As I have converſed with and received my information from perſons of education who have travelled in that country, receiving from the fountain-head my accounts, I think they will meet with eſtimation.

The city of Berghen, formerly Biorginn, capital of the dioceſe of that name, is the largeſt and moſt conſiderable trading city of Norway; it is ſituated at the bottom of a valley, ſurrounded and defended by ſeven large mountains: its fortifications on the ſea-ſide do not deſerve mention. Formerly there were thirty churches and convents in Berghen; at preſent there are only four pariſh churches, three of which are Daniſh, and one German. The churches are built of ſtone, as well as the houſes of the noblemen, conſuls, and principal merchants. The moſt remarkable building is the cuſtom-houſe, at the entrance of the port. There is a Latin ſchool founded in 1544, and endowed by Peter the biſhop: its revenues were encreaſed by Frederic II. and his ſucceſſors. At this time it maintains twelve ſtudents in philoſophy, mathematics, hiſtory, and the French language. The marine ſchool was formerly ſufficiently numerous, but it is fallen into decay.

Berghen

Berghen formerly had the privilege of coining; this ſhe retained until 1575. As yet there is preſerved in the cabinet of medals at Copenhagen, one which was ſtruck here in the reign of Eric. The city was built in 1070 and 1071. Several councils have been held here. As the greateſt part of Berghen is built of wood, this town has frequently been a prey to the flames: it was burnt in 1248; eleven churches were reduced to aſhes: the ſame misfortune happened to it in 1472, in 1623, in 1640, in 1702, and in 1756; at this laſt fire ſixteen hundred houſes were deſtroyed. The city is very extenſive. The ſtreets are not ſtraight, and are irregularly paved with large and ſmall ſtones, but are kept very clean. The houſes, although built of wood, afford a very pleaſing appearance, from the diverſity of colours with which they are painted: they are extremely pretty within; no gold or ſilver is ſeen, but the furniture is neat, and agreeably ſimple.

The city of Berghen may contain three thouſand houſes, and more than twenty thouſand inhabitants: the inhabitants of Hamburg, Lubeck, and Bremen, annually reſort there for the fiſhery.

The religion of the country is Lutheran, of the creed of Augſburg, known in Germany by the title of Evangelical; it is the religion of the ſovereign, and prevails through all the poſſeſſions of the King of Denmark. All other religions are tolerated (but without allowance of public worſhip), provided they do not diſturb the commonweal. Every inhabitant, whatever may be his religion, or ſtation in life, enjoys equally the protection of the government; no one undergoes vexation for conſcience ſake.

As to the manners of the inhabitants of Berghen, it is difficult to ſatisfy the reader on that article, for it is compoſed of different nations; many Germans and Scotch have ſucceſſively come to eſtabliſh themſelves here, and intermarried with the natives: in general the men are ſtrong and robuſt, little poliſhed, although affable to ſtrangers from intereſt. There is but little nobility at Berghen; moſt of the inhabitants are merchants or tradeſmen, dealing by wholeſale or retail. There are however ſome diſtinguiſhed families, but they are very few in number.

The women are in general fond of work; they employ themſelves in their houſehold affairs, and in commerce; they are not addicted to luxury; they receive ſtrangers, to whom they are partial, with courteſy, and particularly the French, who are very welcome viſitants; which occaſions on the part of the huſbands a great jealouſy of them. The Norwegian women are handſome, but not well informed: more politeneſs is met with in other parts of Norway, but throughout the country Bacchus and Ceres find more votaries among the men than Venus. They are fond of ſpirits, and ſmoak a great deal. They make up aſſemblies, conſiſting wholly of men, and prefer them, which they call *eſtaminet*, to the ſociety of the ladies; this engages them in turn to revenge themſelves without ceremony, by the help of more amiable and gallant ſtrangers.

The garriſon of Berghen is compoſed of one battalion of regular troops, one free company of one hundred and fifty men, and a ſmall detachment of artillery, making together ſix hundred men.

The commerce of the city of Berghen conſiſts of all ſorts of fiſh, fat merchandize, ſkins, and wood. Theſe commodities are produced in the provinces north of Berghen. The haven is ſafe and good, and can hold a large number of veſſels of every dimenſion. It has an additional advantage of never freezing, and being always navigable. The burghers of Berghen have about eighty veſſels employed in external commerce, and with which they trade through the ocean, in the Mediterranean, in the North ſea, and in the Baltic. Beſides, upwards of one thouſand veſſels of different nations arrive there, bringing ſalt, grain, flour, brandy, and other commodities. They alſo ſend ſeveral

veſſels to Greenland to fiſh for ſeals, the fat of which ſerves to make oils, very much eſteemed for lamps. A very conſiderable traffic in grain of every deſcription is carried on at Berghen, on account of the ground throughout the bailiwick being poor and ſterile. Its inhabitants, particularly on the coaſt, are, generally ſpeaking, fiſhermen: they are obliged to furniſh themſelves with what grain they may have occaſion for from the warehouſes in the city, which are always abundantly ſupplied. All the inhabitants to the north of Berghen reſort there, from the diſtance even of three hundred leagues, to lay in their ſtock of corn and other commodities, Drontheim not poſſeſſing equal advantages: in ſhort, Berghen is the granary of Norway. The river of Berghen, and all the neighbourhood of the coaſt, abound in fiſh. The moſt conſiderable and profitable fiſheries are thoſe of the cod and herring; it is from the produce of theſe that the Daniſh and foreign veſſels take in their loading for all parts of Europe. Theſe are the gold mines of the country. The ſtock-fiſh prepared at Berghen is in great eſteem throughout the ports of Spain, Italy, Holland, Flanders, and even England. It is alſo exported to the Baltic, as well as cod dried and barrelled, which the Norwegians ſend all over Europe. A very large quantity of fiſh oil as well is ſhipped at Berghen, beſides goats' ſkins, ſheep ſkins, tallow, pitch, and planking.

I have now to mention the trade in *rogue*, of which there is a great conſumption in Brittany: *rogue* is the roes of cod-fiſh; it is a bait without which there is no fiſhing for ſardines. The cod fiſhery, for the purpoſe of extracting the roes, is carried on on the coaſts of Norway from the beginning of January to the middle of April. Cod is taken at other times of the year; but it is within theſe periods only that the roe is found. The fiſhery begins in January on the coaſt of Nordland and Finmark, more than an hundred leagues north of Berghen. The fiſh deſcends ſucceſſively along the coaſts, always towards the ſouth, as far as Berghen, and thirty leagues beyond to Schutneſs, where the fiſhery ends with the month of April, on account of the cod then leaving the ſhore for the ſea, in order to lay its eggs. The fiſhery does not begin at Berghen before the end of March. The Norwegian fiſhermen carry on this fiſhery in cloſe places only: they uſe ſmall boats of ſix or eight tons burthen. They have ſmall wooden ſtorehouſes on ſhore, where, after opening the fiſh and taking out the roe, they ſalt and lay it in pyramidal piles, and tranſport it to Berghen after the end of the fiſhery in April. The merchants then buy the roes of the fiſhermen and barrel it. This fiſhery is ſeldom conſiderable in the bailiwick of Berghen, although it be of ſeventy leagues extent; it is deemed large when it extends to four thouſand barrels. But the beſt fiſhing is on the coaſt of Nordland, the ſea on which coaſt affords more fiſh than any other. The inhabitants of theſe northern countries bring to Berghen, the moſt conſiderable port in Norway, and that which is moſt reſorted to by foreigners, the whole produce of their fiſhery, as well the fiſh as the roe, in veſſels of from one hundred to two hundred tons burthen. The ice and ſtorms hinder the arrival of theſe veſſels before the month of May, ſo that it is impoſſible before that time to fix the price of *rogue*. In tolerable years, at the beginning of June, there are commonly fifteen or ſixteen thouſand tons of *rogue* in the warehouſes of Berghen (the meaſure of the ton is about twenty-eight gallons Wincheſter), the price of which is commonly three or four rix-dollars, from twelve to fifteen ſhillings of our money; and in plentiful years, as low as two rix-dollars, or eight ſhillings nearly. It has even been known as low as a dollar, or three ſhillings and ninepence per ton; but in 1767 and 1768 the price was exceſſive. Never was it known ſo high, owing to a competition among the buyers; it was ſold at from five to ſix dollars. This price, which is without example, makes it deſirable, for prevention in future, and for the benefit of Brittany, that a ſingle company ſhould poſſeſs the privilege of

ſelling the roes to the fiſhers of ſardines upon the coaſts of that province. It is to be noticed, on packing the tuns ſworn guagers attend to ſee them well packed and filled. Thirteen of theſe tuns go to a laſt, or two tuns Engliſh; weight is out of queſtion. The freight paid at Breſt, or any other port of Brittany, is about twenty-five ſhillings per laſt, with ten per cent. of average. The duties, which are trifling, and all the expences included, do not amount to ſevenpence-halfpenny per barrel. This is all the information which I can give of the trade of Berghen and Norway.

I ſhall now ſketch out an idea of the manufactures, and branches of external trade exiſting in Norway: I ſhall explain its mode of adminiſtration; but as it is united to that of Denmark, and as privileged companies formed at Copenhagen direct the external trade of the two countries, I ſhall firſt enter into a detail of the government and forces of Denmark.

The government is deſpotic, but mild, and tempered by its ſolid and fixed conſtitution. The provinces are governed by bailiffs, charged with the maintenance of the laws, the inſpection of the king's revenues, and the ſpecial protection of the country people. They have no juriſdiction over them but in matrimonial caſes; in any others they can act only as mediators: they cannot prevent acceſs to the throne, nor even keep thoſe from appealing to ſuperior tribunals, who may have complaints to prefer againſt them, which occaſions great mildneſs in the adminiſtration of law in the provinces. The king is the ſoul of juſtice; he reſerves to himſelf the approbation of all deciſions. No ſentence can be put in effect before it has obtained his ſignature, whether it effect the life or credit of the individual. In this is ſeen an important law, which proves the wiſdom of the legiſlator; it is found in the nineteenth chapter of the firſt book of the Daniſh code. "Any perſon accuſed of a crime, of whatſoever deſcription it may be, may, on giving ſurety, come to court and return; enjoying all neceſſary freedom for his defence."

I have already obſerved that the Lutheran is the only religion authoriſed by law, but that every other is tolerated. The king, in the ſame manner as all proteſtant princes, is head of the church in his dominions: his ſentence in any matter relative to the church and the exterior mode of worſhip is concluſive. The authority of the biſhops, a reſtraint upon the clergy, only extends to the conferring holy orders, and keeping the prieſts to their duty: they have no temporal juriſdiction, nor other rights than ſuch as are neceſſary for preſerving proper diſcipline and regularity in the church.

The Danes and Norwegians love their king; but the former are better inſtructed, and of more gentle manners. This is the reſult of an examination which is practiſed in the towns of Denmark by perſons ſelected by the magiſtrate to watch over the education of the children, and the adminiſtration of the property of the pupils: they can, of their own authority, diſpoſe of children neglected by their parents, and put them out to employments. The law even allows them to reimburſe themſelves by execution for the advances which they make for the children; and if the family be indigent, the almshouſes are obliged from their funds to reimburſe them. The ſame people are obliged to watch over the property of minors, and exact a juſt account; and for the better ſecurity of the pupils, the law requires of thoſe who dwell in a houſe, or in the neighbourhood, where a father dies, having orphan minors, to make a declaration as early as poſſible before a magiſtrate, under a ſevere penalty.

With reſpect to the external commerce of the Danes, Chriſtian IV. was the firſt of their kings who eſtabliſhed in his ſtates an Eaſt India company. Chriſtian V. new-modelled it, and gave it a charter, the twenty-eight of November 1670. It fell to the ground under Frederick IV., who uſed great efforts towards ſupporting it. Chriſtian VI., in 1732, ſet it on foot again: this is the epoch of the preſent eſtabliſhment.

The

The inſurance company was formed in 1727; it is divided into ſhares of a thouſand crowns.

The bank, which may be eſteemed the ſpring of the Daniſh trade, owes its exiſtence to a company, which by this eſtabliſhment rendered a ſignal ſervice to the two kingdoms of Denmark and Norway.

The African company was eſtabliſhed in 1755, to continue a branch of commerce begun by individuals: its charter, granted for forty years, allows an excluſive right to this trade from the 22° to the 36° of latitude. Hitherto the trade has been carried on chiefly with Saffy, Sallee, and Santa Cruz. The company import wool, copper, wax, and leather; it exports thither linen and woollen cloths, ſpices and other commodities which Europe furniſhes to Africa. The ſame company exports to the Weſt Indies, that is to ſay, to the iſlands of St. Thomas, St. John, and Santa Cruz; it is compoſed of five hundred ſhares, each of five hundred crowns.

I have previouſly noticed the company which carries on excluſively the trade of Iceland. I have a few words to ſay of the manufactories. Frederic V. neglected nothing to eſtabliſh them in Denmark and Norway. They manufacture ſail-cloth, ordinary linens, cambric, paper, tobacco, ſtuffs, refined ſugar, earthen-ware, porcelain, alum, and ſoap. At Copenhagen they make lace, gold and ſilver fringe, all ſorts of jewellery, arms, muſkets for the army, blankets, and ſilk ſtuffs, ſtained and painted carpets, wove ſtockings, hats, and velvet. Their induſtry in tanning of leather promiſes them ſucceſs. The gloves of Runder and Odenſu are famous; in ſhort, manufactures increaſe and mend daily: whatever foreign merchandize can be diſpenſed with is regularly prohibited.

In Zealand and Norway are cannon and other foundries. This is the roll of the land forces of Denmark, according to the regulation of 1763:

Horſe and foot guards	704
Cuiraſſiers	4380
Dragoons	2920
Huſſars	600
Infantry	20,020
Artillery	1158
Engineers	31
Total	29,813

Beſides theſe, in Denmark and in Norway are thirty thouſand national guards, among which is a body of ſkaters of ſix hundred men, very dangerous enemies; who, by means of a particular kind of ſkate, get forward over the ice and ſnow with incredible ſwiftneſs.

The king of Denmark in 1763 had twenty-ſix ſail of ſhips, carrying from forty to ninety guns, and ſeven or eight frigates. The ſailors deſigned for the royal navy are of two claſſes. Thoſe who dwell by the ſea-ſide are claſſed, and their number is about twenty-five thouſand. Theſe men ſerve the king in all extraordinary armaments, and almoſt always in partial equipments. The ſecond claſs, which is more intimately united to the royal navy, is compoſed of four diviſions: each diviſion has its chief, and ten companies of each one hundred and eighteen men. The companies are commanded by captains of ſhips, who have two ſubaltern officers under them. It is in imitation of this corps that, at the end of the war, ſixteen companies of ſoldier-ſailors were formed in France, under the name of the regiment of Dunkirk. This ſecond claſs of ſailors

conſiſts

conſiſts of four thouſand ſeven hundred and twenty men. It furniſhes complements of men for common occaſions, and workmen for the dockyards; a commiſſion was eſtabliſhed in 1739, charged with the direction of the building of veſſels, it is compoſed of three captains of ſhips and three builders. By this wiſe eſtabliſhment no veſſel is built, the conſtruction of which has not been previouſly planned, and none are conſtructed in oppoſition to the remonſtrances of experienced officers, ſuch as have frequently in France been occupied through an entire voyage in endeavouring to remedy the faults of the builder.

There is a company of cadets living at Copenhagen in an edifice erected by Frederic IV. in 1701. This company is the ſeed-bed of officers, as the Royal Marine Eſtabliſhment is in France. The director of navigation teaches them that art, and geometry; an officer of artillery gives them leſſons in that branch. They have other maſters for arithmetic, geography, hiſtory, the Engliſh and French languages, drawing, dancing, and fencing. The firſt builder explains to them the conſtruction of a veſſel. In order to combine practice with theory, every year a frigate is afforded them, on board of which they ſucceſſively go through the duties of ſailors, pilots, and officers. The marine department is directed by a counſel under the title of *The United College of Admiralty and Commiſſariat General.* It is compoſed of three civil officers; the firſt of which is ſecretary of ſtate, and chief of the department, and of four admirals.

I forgot to mention that the war department is generally given to a general officer, who, as ſoon as he obtains this dignity, renounces his command. All memorials reſpecting the advancement of officers, the adminiſtration of juſtice, and the maintenance of diſcipline, are addreſſed to him. He ſignifies what are the orders of his Majeſty. There is a particular department, called the *Commiſſariat general of War*, compoſed of ſix perſons, the chief of whom is the miniſter; its functions, to look to every thing which regards the pay and cloathing of the troops, providing for them, and directing their ſtations.

I ſhall terminate this article with an enumeration of the towns, and inhabitants of Denmark and Norway. There are in the kingdom of Denmark ſixty-eight towns, twenty-two burghs, five hundred and eighty-three noblemen's eſtates, ſixteen baronies, and fifteen lordſhips. In Denmark and Sckleſwick thirty-three thouſand two hundred and fifty-nine children were born in 1776, and twenty-nine thouſand nine hundred and fifty-nine perſons died: from which may be inferred with likelihood, that the population of Denmark is about one million.

There are but eighteen towns in all Norway. In 1766 twenty two thouſand three hundred and ſeventy children were born, twenty thouſand and ten perſons died; the enumeration of its inhabitants may conſequently be eſtimated at about ſeven hundred thouſand.

On ſpeaking of the roe of the cod, I did but mention the names of Nordland and Finmark, it may be well to ſay ſomething more of them. Nordland and Finmark are two bailiwicks north of Drontheim, which is but the ſecond commercial town of Norway, although looked upon as the capital. Drontheim was formerly the reſidence of the kings of Norway; it has an excellent port, and next to Berghen, produces more articles requiſite for ſhipping than any port in the north. The bailiwick of Nordland extends from Nummedal to Finmark; it comprehends the provoſtſhip of Heligeland, formerly Halogia; Ramus endeavours to maintain that this country is the Ogygia of Homer, and Ulyſſes the god Outin: the reſult in ſuch caſe would be, that this province muſt have been inhabited immediately ſubſequent to the ſiege of Troy. It furniſhes fat articles and fiſh; good paſtures are met with here, and large foreſts. At the

end of this provoſtſhip is a mountain with ſeven points, very highly elevated, and which are diſtinguiſhable twenty leagues from ſhore. The inhabitants are principally engaged in the fiſhery, as well as thoſe of Finmark. Finmark is divided into eaſtern and weſtern. The firſt part includes the mountain called Nord Kin, ten Daniſh miles from the North Cape, at the extremity of the main land; it comprehends the iſle of Wardoe as well, ſituated about an Engliſh mile from ſhore: beſide a port of this iſland is the town of Wardhus, which is the moſt northerly fortreſs in the world. The ſecond part of Finmark, the weſtern, comprizes the iſle of Mageroe, in which is the moſt northern mountain of Europe, called the North Cape. On all theſe ſhores, ports, or excellent anchorage, is met with. It ſeems as if nature took pleaſure in forming retreats of greateſt ſecurity in the moſt frightful quarters of the univerſe, and in the moſt ungenial climes; any veſſel, tempeſt toſt, which ſhould be under the neceſſity of making for the coaſt, is every where ſecure of an aſylum whatever wind may blow. The reader has to be informed that every fiſherman is a pilot, and that they proceed two leagues out to ſea to pilot a veſſel, however high the wind may be. It is further to be underſtood, that notwithſtanding theſe coaſts have a moſt tremendous apppearance, they are much leſs dangerous than they ſeem, on account of all the peril being viſible and navigation ſafe every where except where there are breakers ſeen. What I have mentioned of the coaſts and inhabitants of Nordland and Finmark may be ſaid of the coaſts and neighbouring nations, all of whom trade in tallow, butter, oil, fiſh, and wood; they follow the ſame mode of living, and are far from being ſo cowardly as ſome authors have reported. On the contrary, all theſe people are brave. Oftentimes they have been ſeen to wait ſteadily for the famiſhed bear advancing to ſeize them: others, without any other weapon than a knife, purſue theſe animals at the riſk of being ſtrangled and torn to pieces, which frequently happens.

Detailed accounts of the Laplanders and Samoiedes are not wanting, but they agree in ſo few points, that the reader is at a loſs what to believe; add to this, they are ſo much encumbered with childiſh fables, that I conſider it to be obliging the public by undeceiving it on thoſe matters, falſe or doubtful, which relate to theſe ſavages. The particulars I am about to detail were afforded by a learned man, who has made ſeveral voyages to Archangel, and who tranſlated for me into Latin, all the obſervations which he had written in German. Nothing is ſo important for the natural hiſtory of mankind, as to obtain exact acquaintance with theſe northern nations, in which is ſtill to be traced the original character of man in his primitive ſtate of nature; whence may be calculated the progreſs of inſtruction and the value of ſociety.

Many journals of voyages to Ruſſia, and above all, the obſervations on the Samoiedes, publiſhed at Peterſburg in 1732, fix the earlieſt eſtabliſhment of theſe people in the neighbourhood of Archangel. On the contrary, it is a fact that they are not to be met with nearer than three hundred werſts, or two hundred and ten miles Engliſh from this town; what gave riſe to this error was the circumſtance of ſome Samoiedes bringing fiſh, oil, and merchandize to Archangel for the account of different merchants, who maintain them as well as their rein-deer; this alſo has induced others to aſſert, that the fiſhery for ſeals and ſea-calves upon the coaſts of the White Sea, from which oil is extracted, is carried on by Laplanders and Samoiedes inhabiting the ſhores of that ſea. This aſſertion is devoid of truth. The Ruſſians alone carry on that laborious and dangerous fiſhery; neither Laplanders or Samoiedes ever inhabited the banks of the White Sea. Their firſt habitations which are not ſtationary, are found on the diſtrict of Mezene, beyond the rivers of that name. This colony conſiſts of three hundred families, all of which are deſcended from two different tribes; one of which is called Laghe,

and the other Wanouta; a diſtinction minutely obſerved among them. This colony bears the name of Objondire; another which adjoins it that of Tihijondire, while that in the neighbourhood of Pouſtozer oppoſite to the ſtrait of Wagatz, commonly called Gougorſkoi, gives itſelf the name of Guaritzi. This ſavage nation occupies the extent of more than 30° of longitude, along the nothern coaſts of the Ocean and Frozen Sea, between 66° and 70° of north latitude, and reckoning from the river Mezene towards the eaſt, beyond the Oby as far as Gueniſée. All theſe Samoiedes, notwithſtanding their being diſperſed over ſo great an extent, and divided into different families, have doubtleſs a common origin; as appears from their phyſiognomy, their manners, their mode of living, and their language.

On the other ſide of the White Sea the Laplanders inhabit a wide ſpread country, from Kandalax to Kola, and from the frontiers of Swediſh and Daniſh Lapland to the ſtraits of the White Sea; they occupy more than a thouſand werſts, or ſeven hundred miles. Nevertheleſs all this large track of country is peopled by no more than twelve hundred families of Laplanders. I have united in this account the Laplanders and Samoiedes for no other purpoſe than to deſignate the exact poſition of the country, and the diſtricts inhabited by each. I am far from imagining with others, that theſe two people compoſe but one nation. The gentleman from whom I hold theſe particulars, aſſures me of the contrary; and further he added, that M. Buffon is egregiouſly miſtaken in his Natural Hiſtory, when he reckons the Laplanders, the Zemblians, the Borandians, the Samoiedes, and all the Tartars of the north to be the ſame race of people. On this ſubject he obſerved to me, that, in ſpeaking of the Zemblians, he ſpoke of an imaginary nation; it being well known, that the country denominated Nova Zembla never had inhabitants, navigators miſtaking for inhabitants of the country the crews of ſome Ruſſian veſſels; particularly as the Ruſſians, who go there to fiſh for ſeals, are accuſtomed to dreſs in the ſame manner as the Samoiedes. Another probability in favour of this opinion is, that the Ruſſians who paſſed the winter there, never once met with the leaſt trace of man, ſeeing no living creatures except white bears, white foxes, and rein-deer, which fed on moſs and fiſh that the ſea threw on ſhore. As for the Borandians, the name is utterly unknown in the north. I have as well been informed, that the crew of a veſſel deſirous of wintering there ſome years after, had entirely periſhed. The twenty-four men of which it was compoſed, were found dead, on the ſpot fixed upon for their winter quarters. For a long time it was imagined that they periſhed from extreme cold; but it was ſatisfactorily ſhewn, that it was owing to the thick and unwholeſome fogs, occaſioned by the putrefaction of vegetables, and moſs on the ſea-ſhore; which poiſoned and deſtroyed them. What confirms this which I am ſtating, is that a colony from Mezene, compoſed of twenty perſons, who had eſtabliſhed their dwelling at a place twenty leagues from the others, ſuffered extremely from the ſame fogs. Although none of them died, they were all ill. The terrible peſtilence, which in the middle of the fourteenth century depopulated Iceland, was no other viſitation than one of theſe fogs.

Some authors relate that ſilver has been found in certain places of Nova Zembla. This is not unlikely, ſince it is current throughout Ruſſia, that in the reign of the empreſs Ann ſeveral rocks were diſcovered in a deſert iſland, encruſted with the fineſt ſilver. Bars of it were ſent to Peterſburg. Great riches were looked for from this diſcovery; the rocks were bored, but the interior was not found to contain any of this precious metal; that which had been met with being only a ſimple cruſt, poſſibly as old as the creation.

The Samoiedes are for the moſt part below the common ſize, they have a ſtout, nervous frame, broad ſhoulders, and ſhort legs, ſmall feet, a ſhort neck, a very large head,

a flat face, little black eyes, a ſunk noſe, wide mouth, and thin lips; their ſtrong black hair hangs over their ſhoulders, their complexions are olive brown, and their ears very large. They have little or no beard. The phyſiognomy of the women bears reſemblance to that of the men, they however have rather more delicate features, and ſmaller feet; but as the two ſexes dreſs alike, it is difficult to diſtinguiſh them. Both one and the other wear dreſſes made of rein-deer ſkins, turned inſide out, which bind round and cover their bodies.

As to what relates to the Laplanders, ſcarcely any reſemblance is to be found between them and the Samoiedes, unleſs it be their dreſs, which is nearly the ſame, their wandering life and their common uſe of the rein-deer. The Laplanders pretty much reſemble the Europeans, and particularly the Fins; they have however the upper jaw-bone rather longer and more high. Their hair is of various colours; and as for what regards the women, there are ſome among them who would paſs for handſome in any nation. The Laplanders further differ from the Samoiedes in their beard, which the former have very thick and buſhy. The Laplanders are eſteemed to be deſcendants of the Fins, and the Samoiedes of ſome Tartar race anciently inhabiting Siberia, which, preſſed upon by other hordes, retreated to the extremity of the continent. The Laplanders do not, as is mentioned in different relations, uſe the javelin, they are even ignorant of the uſe of it; they have muſkets, and buy their powder at Kola. They do not eat their meat and fiſh raw like the Samoiedes, they do not make flour of pounded fiſh bones, this cuſtom is uſual among the Fins of Carelia; but the Laplanders make uſe of the fine pellicle which is under the bark of the fir-tree; they lay in a ſtock of it in the month of May, dry it, reduce it to duſt, and mix it with flour of which they make bread; they pretend it a ſovereign remedy againſt the ſcurvy. They do not make fiſh-oil their beverage. It is not true that polygamy is allowed among them, any more than the reputed practice of marrying without regard to affinity. They do not offer their wives and children to ſtrangers; this charge is void of proof. Much has been ſaid of the witchcraft of the Laplanders, but all the tales on that ſubject are much exaggerated. Although the greater part of them profeſs Chriſtianity, they have nothing of it among them but the name. They find great difficulty in changing their manners, and quitting their idols. Neither the Laplanders nor the Samoiedes are ſo ſhort as they have been reputed by hiſtorians, who have been deſirous of making them paſs for pygmies; however, they are very little more than from four feet three to four feet five in height. The life of the Laplanders is an image of the life of our firſt parents. They live without houſes, without farms, without ſowing, without planting, without ſewing, or making cloth, &c. Providence has afforded them an animal which requires little or no care, and this ſatisfies all their wants. The rein-deer is the leaſt expenſive of all domeſtic animals, and at the ſame time the moſt uſeful; it feeds and takes care of itſelf; in ſummer it lives on moſs, leaves, and herbage, which it meets with on the mountains; in winter it ſcratches up the ſnow with its feet to get to the moſs, which inſtinct points out to it. When a rein-deer has been running all day, his maſter does no more than let him looſe, or tie it to a tree, and carry it a couple of handfuls of moſs: it has a ſtrong reſemblance to the ſtag, but differs in its horns projecting forward. This animal ſerves the Laplander inſtead of fields, meadows, horſes, and cows. Its fleſh and its milk form his principal food; its ſkin he uſes for clothing in winter, and in ſummer he ſells it, or exchanges it for a tent, which ſerves him to dwell in. Of its hair thread is made, its bones and horns make furniture and tools, its ſkin provides him with a bed, and to ſum up the whole, its milk makes him excellent cheeſe. Thus does the rein-deer make the fortune of a Laplander. Several of them keep as many as a thouſand; and know them all by their names. When they travel, or are deſirous of tranſporting their effects,

they uſe a ſledge in form of a boat; the water cannot penetrate it, and the traveller in it is ſheltered from cold. Theſe ſledges are drawn by the rein-deer with ſo much ſwiftneſs, that they ſeem almoſt to fly over the mountains and valleys, and through the foreſts: they are uſed only upon ice and ſnow. The Laplanders, as well as the Fins, make uſe of a ſingular kind of ſkate peculiar to themſelves; it is made of planks ſix or ſeven feet long, and nearly a foot broad: this plank is pointed, and turned up before. A ſimilar plank is faſtened to each foot, and taking a long ſtick, the bottom of which has a flat circle attached to it to prevent its ſinking into the ſnow, they ſkate with ſuch velocity as to overtake bears and wolves. This is the whole which in detail can be ſaid of theſe northern people. I return now to Berghen.

FOURTH PART.

Containing the Courſe from Berghen to the Eaſtern Coaſt of Iceland; a Deſcription of the Ports in thoſe Parts; of the Iſlands of Ferro, Shetland, and the Orcades; and Return to France.

AFTER taking in refreſhments at Berghen for my ſhip's company, and completing the neceſſary repairs to my frigate for fitting her for ſea, I made ready to ſail. The wind was adverſe for ſeveral days; I was deſirous of a ſouth wind, in order to get out by one of the paſſes north of Berghen, and continue my courſe direct towards the coaſts of Iceland; but the wind did not come round to the ſouth before the tenth of Auguſt, at three in the morning, and at four o'clock we weighed anchor, the wind weak, and the ſky overcaſt, with ſmall rain. We hoiſted all our ſails, and ran ſix leagues on the N. N. W. to N. W. tacks, keeping the land to leeward, that is to ſay, the ſouth, on account of the winds from ſhore. After running this diſtance we perceived an opening in the northern bank of the river; we made for it immediately, in order to keep the cape at N. E., and paſs through it. We coaſted along a ſmall iſle to leeward, within piſtol-ſhot, in order to avoid a rock under water, which was ſtill nearer to us, to judge from the eddy, and which the pilot pointed out. After paſſing this rock we ſteered N., then N. quarter N. W., afterwards N. N. W., in order to double ſeveral ſmall iſlands or rocks which we left to leeward. After doubling all theſe iſlands, we found ourſelves in a little road, cloſe as a baſin; the entrance of which, and the way of getting out, was inviſible. A ſquadron of four or five veſſels might anchor here in ſeven fathoms water, ſandy bottom; veſſels have wintered here. On all ſides iron rings are ſeen, for the purpoſe of mooring. We went out of this baſin through a gullet or narrow ſtrait, wherein two veſſels could ſcarcely paſs abreaſt, and found ourſelves afterwards in a bay of more than twelve leagues in circumference, and which had no apparent opening but to the N. W., three leagues before us. I then ſhipped my oared cutter, and carried all the ſail I could, ſteering N. W., in order to get out of the bay by the opening we ſaw. At noon we were between the two iſlands, which form this paſſage, which is called the paſſage of Hennegat, or Hennefiord; hence the Norwegian pilots returned, and I ſteered W. N. W. in full ſail, in order to get rid of the land. It may be obſerved, that this way out of the river of Berghen is long, but it is not difficult. It is ten French leagues from Berghen to this paſs, called Hennegat; but in theſe ten leagues there is no more than half a league of difficult navigation. Two anchorages are to be met with for large veſſels, and ſeveral for ſmall, between Berghen and the entrance of the little baſin, of which I have before made mention, where ſhips may ride in ſafety, whether the wind be contrary, or too violent, to go to ſea. This road-ſtead is even more happily ſituated for veſſels coming from ſea, which find themſelves upon the coaſt in bad weather; for they

they find a ſafe aſylum—*ſtatio bene tuta carinis*. This way out from Berghen by the north, although longer, is a much finer one than that by the ſouth, called the Paſſage of Cruxfiord, which is only ſix leagues from Berghen. The courſe by Cruxfiord is ſhorter, but it is narrower alſo, and the anchorages are not ſo good; in other reſpects the wind, and the deſtination of the ſhip, muſt decide which to prefer, for on the ſide of the paſſages of Hennegat, or Holmfiord, more to the north, the ground or rocks which form the beds of the water are very low; there is no good land-mark, and the continental objects are very diſtant. No danger however can occur from making land towards the north, particularly in fine weather: pilots are met with every where; there are even four in the two iſlands which form the paſſage of Hennegat. Theſe pilots, who follow the trade of fiſhermen as well, are always at ſea. When the weather allows, as ſoon as they deſcry a ſhip, they hoiſt all ſail, or row with all their might to reach her. This paſſage is, according to my eſtimate, in lat. 60° 40′.

I before obſerved, that on leaving the paſs I ſteered W. N. W. to leave the land, and enable myſelf to take advantage of whatever wind might blow. We had had a S. and S. S. W. wind, and it might poſſibly get round to W. I run fifteen leagues, ſteering W. N. W. and N. W. quarter N. The eleventh I was in lat. 61° 20′, long. 1° 34′ W. of Paris. I ought not to forget to remark, that being by eſtimation twelve leagues from Norway, I ſounded but found no bottom; but after proceeding eight or ten leagues farther I found one hundred fathoms water, with a muddy grey ſand, which confirms the obſervation before made, that the more one nears the coaſt of Norway the greater the depth of water, the bottom becoming muddy; and that the more one approaches the coaſt of Shetland, the more gravelly the bottom, mixed with black ſtones; and that in mid-channel there is ſeventy fathoms water, with a fine ſandy bottom.

The twelfth, thirteenth, fourteenth, and fifteenth, little wind, continually changing all round the compaſs. According to the variations I directed my courſe, and the fifteenth, at noon, I found the lat. 65° 20′, long. 10° 5′ from Paris. During the whole of theſe four days the ſky was overcaſt, but with a fine ſea. The twelfth, we obſerved 17° of variation, and we ſaw a prodigious bank of little red fiſh, which had the appearance of a ſand-bank, over which the ſea broke for an extent of two leagues. Similar heaps of fiſh are frequently met with in theſe ſeas, which may cauſe anxiety to navigators at the firſt ſight, the more ſo from their attracting prodigious flocks of ſea-fowls, as is noticeable on ſand banks. Theſe ſeas are alſo well peopled with whales. On the fifteenth, in the morning, I ſaw a bird which merits deſcription: it was as large as a gooſe, with a white body; but its head, its tail, its neck, and the end of its wings, were of a jet black.

The ſixteenth, the wind blew hard from the N. E., with a heavy ſea; I made a tack under main and fore-ſail, conceiving myſelf to be E. quarter S. E. of the point of Langerneſs, and eighteen leagues diſtant. I kept on the N. W. and N. N. W. tack, and made the point of Langerneſs at ſix o'clock in the evening, bearing N. N. W., ſix leagues diſtant. As I was threatened with bad weather I made another tack, leſt the wind ſhould get more to the E. I ſaw many fiſhing veſſels luffing up to ſhore. By night the wind blew high, with a dreadful ſea.

The eighteenth, the wind ſomewhat ſubſided, and the ſea became calm; this is what always happens in theſe climates: the ſea ſwelling and ſubſiding continually with the wind, I ſteered N. W. to make the land. I ſpoke to ſeveral Dutch veſſels, and to one Dunkirker, who informed me there was nothing new in the fleet. At ſix o'clock in the evening, the weather ſerene and clear. I made the point of land S. of Burgerfiord, at S. E. computedly diſtant eight leagues. It is to be remarked, that although the land-

marks

marks of Iceland be very high, you muſt be near to them to ſee them, owing to their ſummits being covered with ſnow, and loſt in fogs frequently, as I have (I believe) before obſerved. I ſounded on taking the bearing before deſcribed, and met with one hundred and five fathoms water, with a muddy bottom. I obſerved with care the ſame day the variation of the needle, which I found to be 29°. I was then within ſight of land, in 67° degrees of latitude.

The nineteenth, twentieth, and twenty-firſt, the wind variable, ſometimes weak, at others violent. I bore under various gales to obſerve the bearings of the land, and look for the French fiſhing veſſels, which uſually are widely diſperſed.

The twenty-ſecond, at three o'clock in the morning, the wind E., the ſky ſerene; I bore to the north as far as 69° of latitude. I then applied to myſelf the lines of Virgil:

Hic vertex nobis ſemper ſublimis; at illum
Sub pedibus ſtix atra vidat, maneſque profundi
Maximus hic flexu ſinuoſo dubitur anguis
Circum, perque duas in morem fluminis arctos
Arctos, oceani metuentes equore tingi. Lib. I. Georg.

The fog thickening, and the wind changing to the ſouth, I made a tack to S. S. W., for fear of being ſurrounded by the ice, owing to the fog and currents. Towards ten at night the wind became violent, nevertheleſs I carried the two lower ſails. In the night the tack and falſe tack of the main-ſail gave way, the ſmall ſtay-ſail was carried away; at the ſame time a ſurge ſtruck the prow violently, and knocked off one of the bumpkins.

The twenty-third, twenty-fourth, and twenty-fifth, it blew N. and N. E. a gentle gale, with a fine ſea, but continually a thick fog. I ſteered S. under eaſy ſail, and ſounding every two hours. This precaution was neceſſary, for as we had foggy weather for ſeveral days, and the Dutch charts notice that the currents run weſt at the north of Langerneſs, I might very eaſily have encountered the ſhore; but after ſounding from time to time, I found I had nothing to fear in ſteering to the ſouth, as there are forty fathoms water four leagues from ſhore to the north of Langerneſs.

The twenty-ſixth we had a freſh breeze from the N. W., and fine weather; I obſerved and found the latitude 65° 57′. In the evening I ſpoke with ſeveral French and Dutch fiſhermen, and ſaw two corvettes from Dunkirk, which were leaving the fiſhery and returning to France.

The twenty-ſeventh, twenty-eighth, and twenty-ninth, the wind changeable, rounding the compaſs, the heavens overclouded, and fog at intervals. As all the fiſhing veſſels are accuſtomed to leave the fiſhery between the twenty-fifth and thirtieth of Auguſt, I made ready for my return as well to Breſt, the more willingly from the continual reign of foggy weather, and the inceſſant bad weather, which put it out of my power to be of any ſervice. Theſe latter days were occupied in my ſeeking the iſland Enkhuyſen. I got into its latitude, and bore on different tacks, E. and W., in order to fall in with it, but in vain. In the night of the twenty-eight we were under ſome uneaſineſs: it was very dark, and perfectly calm: the officer on watch came to wake and tell me that they heard an unuſual noiſe. I immediately went upon deck, and effectively heard ſounds like thoſe made by the ſea on breaking over rocks. I immediately hove the lead, and payed out one hundred fathoms without finding a bottom. Nevertheleſs the noiſe continued about a quarter of an hour, after which we heard no more of it. I imagine the noiſe to have been occaſioned by a ſwarm of fiſh about the frigate; and conſider that there is room for believing that Enkeuyſen iſland is no longer in exiſtence, ſince of five hundred

hundred fiſhing veſſels which annually reſort to the fiſhery, not any for theſe thirty years paſt have fallen in with it. This iſland has perhaps been ſwallowed up by ſome ſimilar revolution, to that of the Goubermans; or poſſibly owing to the fog or bad weather, an ice-bank may originally have been miſtaken for an iſland.

I promiſed to ſpeak of the ports ſituated on the eaſtern ſide of Iceland, as I am on the point of leaving that ſtation, it may not be an improper place to introduce to the reader, the information on that head, I have been enabled to obtain. I ſhall begin with the firſt anchorage ſouth of Langerneſs, and ſucceſſively deſcend to the lower part of the coaſt. Langerneſs is a very long tongue of land, and very even faced; it may be diſcerned ſix or eight leagues out at ſea. It is ſituated exactly under the polar circle. South of it is a place where any veſſel may anchor in ten or fifteen fathoms, ſandy bottom; ſheltered to the north, and on the weſt. On coming from the eaſt to this anchorage, whether to take ſhelter from bad weather, or to take in water, a ſhip muſt keep cloſe to ſhore; it is very ſafe, and may be coaſted ſecurely at muſquet-ſhot diſtance. The firſt object diſtinguiſhed, is a maſt or flag-ſtaff, on three or four houſes or cabins. She may anchor oppoſite theſe, but it is better to proceed higher up, and leaving theſe houſes on the ſtarboard quarter, proceed till other houſes are ſeen on a hillock fronting the ſea, it is here ſhe ſhould make ready to anchor. Fiſhing veſſels generally anchor a quarter of a league from ſhore, oppoſite theſe ſecond houſes; but a veſſel of war will lay very well half a league from ſhore; when the wind is northerly or weſterly, a veſſel is ſafe at this anchorage; but if there be appearance of a ſouth or eaſt wind, ſhe muſt ſet ſail.

Vapenfiord is a good bay for fiſhing veſſels of all dimenſions; the anchorage is oppoſite ſome huts in fifteen to eighteen fathoms water, bottom of muddy ſand; but as there are two rocks in the middle of the bay, large veſſels which cannot tack quickly, ſhould not enter unleſs with a favorable wind.

Zand-boek is a road where a veſſel is ſheltered from all winds from towards the ſouth, anchoring on the ſouth ſide oppoſite the Icelanders' huts. There are rocks in the north part of the bay. Between theſe two ports, there is a ſmall and very ſafe iſland called Bourhick.

Burgerfiord is a good road for ſmall frigates and corvettes. When eight leagues from ſhore or thereabouts, you perceive a mountain which has the appearance of the embrazure of a cannon, and which ſerves as a landmark for this part of the coaſt; being placed between the two bays I have juſt mentioned.

Lommer-fiord is a very good port for frigates; they muſt anchor to ſtarboard on entering, at the foot of ſome fiſhermen's huts, in ten fathoms water, a cable's length from ſhore. Behind this bay, there is alſo a mountain, which at a diſtance reſembles a crown.

Zuider-fiord, a ſmall road for fiſhing-veſſels, or very ſmall corvettes.

Meuve-fiord, a ſmall road open to the eaſt wind, which blows full upon it.

Ruider-klip, without diſpute the beſt haven on all the coaſt of Iceland. It is indeed a road, it is exactly cloſed, and fifty veſſels of war might anchor in it, with eaſe in perfect ſafety. It may be entered with any wind from the eaſtward, a veſſel may anchor any where in the bay in twenty-five to thirty fathoms water, muddy bottom; but the beſt anchorage is at the bottom of the bay, on the north ſide, after paſſing or doubling a point of gravel, which looks red at a diſtance; and which advancing into the bay, forms a creek in which there is excellent anchorage. There is fifteen to eighteen fathoms water with ſandy bottom. A ſhip may moor acroſs, ſending a towing rope with a ſmall anchor aſhore, which care muſt be taken in ſinking into the ground or otherwiſe ſecuring.

Kolhom

Kolhom is a bay which has good anchorage, but the entrance is difficult; you have to paſs to the ſouth of an iſland called Schorres, which is before the bay, becauſe in the north part there is a reef which extends very far, and renders the paſſage to the north of this iſland almoſt impracticable.

Papei-fiord is an open road to which the iſland Papei, which lays at the entrance, has given name.

Preiſter-bay, and Ingelse-bay, are two other roads; this laſt is ſo denominated from its being much frequented by the Engliſh: on the parallel of theſe two bays, ſix or eight leagues out at ſea, there is a large flat rock called Walſboc, looking like the back of a whale. As fiſhermen have informed me that there are dreadful currents, and terrible eddies between this rock and the land; I am given to think there may be a chain under water, extending from this rock to the ſhore; and that there would be danger in paſſing between: notwithſtanding fiſhing veſſels have frequently paſſed. May it not alſo be conceived that Enkeuyſen, which is placed under the ſame parallel, is no other than the iſland or rock Walſboc, ſeen through a fog by fiſhermen who could not diſtinguiſh the land, and who were ignorant of the diſtance they were away from it. This is the more probable in ſo much as the greater part of the maſters can neither read nor write, and are not qualified to make a good obſervation.

The iſlands of Ferro are ſituated in the North Sea, between 61° and 63° of latitude, and between 8° and 10° of longitude weſt of Paris. The exact time when theſe iſlands were diſcovered is not known, but it is known that under Harold Haorfager king of Norway, they were inhabited and frequented by foreigners. Towards the eleventh century the chriſtian religion was preached here. Chriſtian III. having introduced the reformation into his ſtates, governed the iſles of Ferro by a provoſt, who depends on the biſhop of Zealand, and has ſeven prieſts under his direction, who do duty in forty churches. Theſe iſlands are under the bailiwick of Iceland. They have beſides a provincial judge, a ſeneſchal, two ſubaltern magiſtates, and a receiver general for the king's lands, who is as well the director of the commerce of theſe iſlands with Copenhagen. The trade is carried on for the king's account, by the chamber of finances. Theſe iſlands are twenty-five in number, ſeventeen of which are inhabited and cultivated. They are divided into ſix pariſhes: 1. Norderoe, which comprizes the following iſles and churches. Videroe, called on the Neptune Vidro. Fulgloe, or Fuloe, two Daniſh miles in circumference. Suinoe, of the ſame ſize. Bordoe, which has a good port in the N. W. Canoe, three miles in circumference; and Calloe or Kalſoe, of the ſame extent. 2. Oſtroe, eighteen miles in circumference; it has ſeven churches, and two ports, called Fugle-fiord, and Kons gaven: this laſt port is in the gulph of Skaale. 3. Stromoe, this iſland is twenty miles in circumference. It is divided into two parts; the northern, which comprehends the principal church of Kolde-fiord, and the ports of Wertmanhan and Halderſviig: and the ſouthern, which compriſes the town of Thorſhan, which has a commodious port defended by a redoubt. It is the principal place of all the iſlands, and the only one where there is a market; the ſeneſchal, and the director of trade, reſide there. There is generally a hundred men in garriſon. King Chriſtian III. eſtabliſhed a college here, which was perfected by Chriſtian IV. M. Thurot came in here to refit in the laſt war, commander of the privateer called the Mariſhal Belliſle, being entirely diſmaſted for the third time. 4. Waagoe, this iſland is ſix miles in circumference. Its principal church is near the port of Midvaag. This iſland has beſides another port called Sorvaag, which as well as the former is in the ſouth part of the iſland. Waagoe is that iſland, which on the Neptune is marked Wage. 5. Sandoe, this iſland is eight miles in circumference. There

is a frightful current ſouth of this iſland near the iſlets, or rocks called Daſlnipen and Dasflets. South of the iſland Sandoe, are two ſmall iſlands called Skuoe and Stoeredimen. This laſt, which is a mile in circumference, is a round rock ſo rugged as to be inacceſſible. South of this is Lutteldimen, where as often as white ſheep are put, they turn black at the end of three months. 6. Suderoe, this iſland is about twenty miles in circumference. Here is the port of Lobroe, at the bottom of the ſmall gulph of Vaago-fiord. This port is one of the ſafeſt and moſt commodious in the iſland. There is a very violent and dangerous current at the ſouth of this iſland, near to Somboe, and round a rock called the Monk, which is a league and a half from ſhore; and which muſt not be neared too cloſely, for I have ſeen breakers, which extended more than a quarter of a league. 'Tis ſaid there is a mountain called Famogen, in the iſland Suderoe, on which is a lake that ebbs and flows at the ſame time as the ſea at Lobroe. It is high water at the Ferro iſlands, at new and full moon at twelve o'clock. Theſe iſlands are ſubject to fogs, which cauſe colds, ſcurvy, and other maladies, reſulting from damp. They are nothing but rocks covered with a little earth, fertile enough, however to render twenty for one. Their only crop is barley. Flocks of ſheep form the riches of the inhabitants, who are reckoned at twenty thouſand ſouls. The whole trade of theſe iſlands conſiſts in tallow, ſkins, ſalted mutton, feathers, ederdown, ſtockings, and woollen caps, and ſhirts. Theſe iſlands are pretty well ſet down on the Neptune, as well as on the chart of M. Bellin. The rock called the Monk, which is ſouth of theſe iſlands, and which from a diſtance appears like a building, is in longitude 9° 5′ weſt of Paris. Upon taking obſervations on a line running E. and W. through the rock, I found it to lay in 61° 17′. I compute the variation to the ſouth of the iſlands of Ferro, to have been 19°.

The Orcades are a heap of iſlands lying north of Scotland, from which they are ſeparated only by the ſtrait of Pentland, which is two leagues and a half broad, and four leagues long; there are ſixty-ſeven of them, of which twenty-eight are inhabited. Theſe iſlands were very little known to the ancients, for hiſtories do not agree upon their number. Pliny and Pompenius Mela, do not reckon more than forty. They doubtleſs conſidered ſome of theſe iſlands called Holms, by the inhabitants, and which are very ſmall as rocks, which however yield excellent paſture. Theſe iſlands were formerly governed by ſeparate kings, but the Scotch dethroned them, and became maſters; the Danes, or rather the Norwegians, afterwards ſeized upon them, but in 1472, the Scotch re-took them. They are now a province of England; they belong to Lord Merton: their contribution to the ſtate is no more annually than five hundred pounds ſterling. The climate is healthy, but cold and damp. Their crops are chiefly barley, which thrives abundantly. The inhabitants have plenty of cattle, and are much given to fiſhing; ſo that fiſh and ſalt beef form the principal trade of the iſlands. Nevertheleſs they furniſh tallow, leather, ſalt, rabbit-ſkins, barley, and woollen ſtuffs. The coaſts of theſe iſlands poſſeſs excellent bays and creeks, but they muſt be known to be entered without danger, for the tides are ſtrong, and the currents violent. The maſter of a Dunkirker related to me a ſtriking anecdote of the currents of the Orcades; he told me that being becalmed in a privateer belonging to Dunkirk, nearly two leagues from ſhore on the northern ſide, the privateer was drawn by the current into the midſt of the iſlands; upon this he caſt anchor, but his cable was cut in an inſtant, and the veſſel was on the brink of being loſt; when ſome fiſhermen came on board, who by the help of a light breeze, conducted her out to the weſt of the iſlands, after having paſſed through much danger, and by dreadful eddies. The mariner from whom I gathered this, confeſſed to me that they were mortally afraid that their pilots, with whoſe nation they were at war,

were

were about to conduct them into ſome port, where they ſhould be made priſoners; and that they were much aſtoniſhed at getting rid of the iſlands ſo cheaply; it coſting them no more than five gallons of brandy, which was the price agreed upon. This privateer was ignorant, without doubt, that there is a reſolute conduct to be held on ſuch an occaſion, the pilot being a foreigner; it is to promiſe a handſome reward for putting the veſſel out of danger, and to make him reſponſible with his life for any accident which may befall the veſſel.

I am unable to deſcribe all the ports and anchorages of the Orcades. Not having been within reach of examining them, I could but take ſoundings and views; I ſhall therefore only obſerve in this place, that in the north of the Orcades where I ſounded, there are fifty fathoms water, rocky bottom, at ſcarcely two leagues from the ſhore; and that I was informed there were thirty fathoms water, a quarter of a league from land. Therefore when leſs than fifty fathoms water are met with, it is high time to tack, in order to avoid the currents. I ſhall obſerve, that having taken the latitude with an excellent ſextant, pretty cloſe to land for better ſecurity of exactneſs in my bearings and diſtance, I found theſe iſlands lay ſix minutes more ſouth, than they are marked in the Neptune. This is the whole of the obſervations I made reſpecting theſe iſlands: what I was enabled to gather beyond from different navigators, agrees pretty well with what Mr. Bellin ſays of them in his *Eſſai ſur les Iſles Britanniques*, and with a chart on a large ſcale of theſe iſlands and thoſe of Shetland, which was given me at Berghen, by the captain of a merchant veſſel, who every year takes a trip to the Orcades, and to Shetland. I have thought proper to ſtate here, notes of what Mr. Bellin ſays of theſe iſlands, after making the neceſſary corrections, and adding whatever is uſeful.

Pomona or Pomonia, is the largeſt and principal of all the iſlands. The lands are very high on the weſtern ſide. It is in this iſland the town of Kirkwall is ſituated, the capital of the Orcades, and reſidence of a biſhop. This town is on the north ſide, it has a port and roadſted, but the moſt conſiderable ports of the iſland are Schapa, oppoſite to Kirkwall, Cairſton, Carſton, and Durſound.

The port of Cairſton is on the S. W. of Pomona. It is a very ſafe port, and fit for the navigation of the weſtern ſide, there are ſeveral paſſages to it between the iſlands. The paſſage called Hamſound, which is ſouth of Pomona, is very good for veſſels coming from the eaſt. This paſſage is navigated by leaving the point of Roſs-neſs to ſtarboard, which muſt not be neared too cloſe, as a reef runs out from it, although to no great diſtance. This point of Roſs-neſs is ſouth of Pomona. Afterwards the little iſland of Lamholm is left to larboard, whence you coaſt along Pomona; and if with contrary winds, there is anchorage in a creek to the ſouth of Pomona in ſix fathoms water, called Schappa-roads. If the weather be favourable, you coaſt along Pomona; on the way a little iſland is paſſed, which the country people call Burrer Botter; it is ſafe, and may be paſſed, according to the wind, either on the larboard or ſtarboard quarter. Carra is then paſſed to the northward, and afterwards a ſmall iſland, both very ſafe, and at equal diſtance between Carra and Pomona; whence ſteering N. W. quarter W. you arrive at the port of Cairſton, where there is anchorage in the road in ſeven fathoms water; but if deſirous of proceeding higher up and getting in ſhore, you may anchor in four fathoms, perfectly ſheltered from all winds, and without any currents or tides to moleſt you.

Cairſton is a ſmall town, at the bottom of the port; proviſions may be obtained there. It is moſt eaſy to approach Cairſton from the weſt, and the road is much the ſhorteſt; but care muſt be taken not to near the ſouthern point of Pomona, as there

is a ridge of rocks about it. There is alſo a good paſſage to it between the iſlands of Soult-Ronalza, and Burra, but it is very narrow. It is dangerous to attempt it, unleſs with a ſure and favourable wind. South of Pomona the tide runs S. E. at new and full, and the difference of high and low water, is twelve feet.

The port of Durſound is on the N. E. of Pomona, within Mull-head, the moſt eaſtern point, and a league from the W. of the point. Mull-head is a very high and diſtinguiſhable land; it is beſides healthy and rugged. There are two rocks to the E., and two others to the N. N. W., but they are very nigh the ſhore. The entrance of the port of Durſound is nearly a mile wide; the middle muſt be taken on account of ſome rocks under water cloſe to land, particularly towards the point to larboard of the entrance. After doubling this point you enter the port, where there is anchorage every where; but to be beſt ſheltered veſſels lay weſt of the point of Neſtin, which is that of the ſtarboard on entering, where you anchor in five fathoms water. Small veſſels go to the ſouth of Durſound, into a creek called Market-bay, where they anchor in three fathoms. Care muſt be taken reſpecting the height of tide on entering this creek; for in the middle of it there is a bank on which there is no more than five feet depth at low water. Neap and ſpring-tides riſe twelve feet at Durſound, ordinary tides but eight feet.

The port of Kirkwall is north of Pomona; to get at it by the eaſt you muſt take the paſſage of Stronſafirth, ſouth of the iſland Stronſa, and north of Mull-head. You muſt near the cape, paſs before Durſound, between the north of Pomona and the ſouth of the iſle of Schapinſha, leaving the iſland called Elgarholm to ſtarboard, and that of Thieveſholm to larboard. As ſoon as you have paſſed the latter iſland ſteer S. S. W., to avoid a rock a mile to the N. W. of Thieveſholm, on which there is but ſix feet at low water. Afterwards ſteer S. quarter S. W., to enter the road of Kirkwall, where you anchor in ſix or eight fathoms water. You may get nearer the town at the bottom of the bay; there is better ſhelter, but it is not ſo eligible a ſtation to ſail from. There is excellent anchorage a league and a half to the weſt of Kirkwall, called Monoo's Bay: but as there are rocks to ſtarboard and larboard on entering, the middle of the channel muſt be kept: it would even be a prudent precaution to take a practiſed pilot of the place on board; they are always to be found.

The iſland Rouſa is north of Pomona; it is of ſmall extent, but the lands are very high. Between Rouſa and Pomona the currents are very violent.

Eaſt of Rouſa is the anchorage called Wire-ſound: to enter it, coming from the eaſt, you muſt paſs through Stronſafirth; but inſtead of keeping to the ſouth of Shapinſha, you muſt keep to the north, having the iſlands Warms and Grain to ſtarboard, after which you ſteer W. S. W., to have the iſland of Egilſha, and thoſe of Wire and Rouſa, to larboard: it is between Rouſa and Egilſha that the anchorage of Wire-ſound is in ſix or ſeven fathoms water. The entrance of this anchorage is without danger; all that is neceſſary is to avoid certain rocks which extend a mile from ſhore to the ſouth of Egilſha: to clear them it is requiſite to keep half a league from the point, and to keep cloſe to the iſle of Wire, which has given name to the Sound. To anchor well in Wire-ſound, you muſt keep St. Agnes church in the iſle of Egilſha at N. E. and by E. The tide does not run ſtrong in this road, which is greatly frequented by fiſhermen, who reſort to Iceland. You may get out of Wire-ſound by a ſmall paſſage north of the anchorage, between the iſland of Rouſa and the iſlet of Stockneſs. In this paſſage there are four fathoms water, but it is very narrow. On leaving this paſs you enter Weſtrafirth, or the ſtrait of Weſtra: the currents are very violent, particularly at high tides. On going through the canal, attention muſt be paid to keeping cloſe to Rouſa, becauſe towards the middle of it, S. W. of Weſtra, there are very dangerous rocks under water. When deſirous of leaving Wire-ſound towards the weſt, keeping the iſles of Wire and

Pomona to larboard, care muſt be taken to keep in with Rouſa; and when an iſland is perceived, called by the natives Inhalla, you muſt ſteer to come up to it on the ſouth, and leave it to ſtarboard, on account of there being no paſſage north of the iſland: it requires a good deal of wind to ſtem the current in this paſſage. You may alſo reach Wire-ſound coming from the eaſt by the paſſage of Sanda-ſound. This paſſage is between the iſlands of Sanda and Stronſa, leaving Sanda and Eda to ſtarboard, and Strenſa and Schapinſha to larboard.

After deſcribing the paſſages and anchoring-places which are in the interior of the Orcades, I ſhall make mention of what concerns the exterior, which is not leſs important to veſſels which may be driven upon the coaſts. I ſhall begin by the ſouthern part, or ſtrait of Pentland, which is, as I believe I mentioned, between Scotland and the Orcades. On coming from the eaſt to make this paſſage, an iſland, which is at the entrance, muſt be kept at a mile's diſtance; it is the ſame thing whether a-head of it north or ſouth. After paſſing this iſland it is requiſite to ſteer through mid-channel, and rather keep cloſe to the Orcades than the Scotch coaſt, on account of many rocks under water on the Scotch ſide; but after reaching the ſouth ſide of the iſle of Hoy, an iſland in the middle of the ſtrait is to be kept at W. quarter S. W. When at no greater diſtance than a league and a half from this iſland, nothing remains to be apprehended from the Scotch ſide: it is the ſame whether this iſland be paſſed on the north or ſouth ſide, there being twenty-five fathoms water on both ſides. When this iſland, called Stroma, is paſſed by, the channel opens, and the currents are leſs forcible. Stroma muſt not be coaſted too near, as it is ſurrounded with rocks. N. N. E. of Stroma, in the iſle of Hoy, there is a creek with anchorage in four fathoms water. On the eaſt ſide of the Orcades the ſhores are tolerably ſafe; almoſt every where there is thirty fathoms water at half a league from the ſhore. On luffing near her ſhores, one may prolong a tack without apprehenſion when the wind is ſtrong; but when there is a chance of a calm a greater diſtance muſt be kept, for fear of being carried away by the currents. On the eaſtern ſide of the Orcades, the point of Sanda is the only dangerous one; nevertheleſs the rocks from this point advance no more than half a league to ſea towards the N. E. North of this point there is a ſmall iſland, which is only ſafe on the ſouth ſide; there a veſſel may anchor to take ſhelter from a north wind. This iſland is called North Ronaldſa. North of the iſle of Sanda there are two rocks under water near to ſhore; but two leagues from the north point, and N. quarter N. W. of it there is a dangerous rock above low water.

Any veſſel may anchor north of the iſle of Edda, ſouth of a ſmall and perfectly ſafe iſland, called Kale of Edda. At the north point of Weſtra there are rocks a quarter of a league from ſhore; but the ſouth part of this point affords a creek, open to the eaſt, where a frigate may anchor under ſhelter from the W. or N. W. A league N. E. of this anchorage is the iſland of Papa Weſtra, ſurrounded by rocks on the weſt, north, and eaſt: they extend more than a quarter of a league on the eaſtern ſide. The weſtern ſhores of the Orcades are for the moſt part very ſafe: they may be coaſted as cloſe as you pleaſe; but care muſt be taken of the currents which run through the ſtraits. I obſerved in 1768 on theſe coaſts 20° 40′ of variation in the needle. I muſt not forget to notice that there are rocks, about ten leagues weſt of the Orcades, about lat. 59° 2′ or 3′: there is one above water; they are called the Stacks. A league north of theſe are others, three fathoms under water. It is high water at the Orcades at full and new moon at forty-five minutes paſt two.

Between the Orcades and Shetland there is a ſmall iſland, called Fair-iſle. As this iſland is in the middle of a much frequented paſſage, called the Fun, I paid particular attention

tention to it. Fair-isle is placed on the chart of M. Bellin, engraved in 1757, in lat. 59° 30′. According to my observations it is 3′ more southerly. This island is pretty high, it may be seen ten leagues off in fine weather; it is safe, particularly towards the south and east. On the north and west side there are some rocks, but they are near the shore. On my second voyage I coasted this island, a short league from shore, on its south side, and remarked a beautiful verdant plain and several houses, the latter of which were distinguished by their whiteness. It appeared to me that it is in this spot, at the foot of the hill, that the anchorage is as marked in the Dutch charts; for the coast goes shelving in in this place, so that a vessel must necessarily be sheltered from all winds from the N. W. round to the N. E. Fair-isle may be about six leagues round. The houses which I saw on this island announce its being inhabited; and sea-faring men have assured me that finding themselves in fine weather within a league of shore, the inhabitants had come off in boats to the privateer, on board which they were to sell them eggs and fowls, and offering them sheep very cheap. We know besides that Fair-isle is fertile in barley, and in good pastures. According to my observations, the variation at Fair-isle was 19° and its long. west of Paris 3° 29′.

North of Fair-isle are situated the Shetland isles, which are but seven or eight leagues distant. These are very lofty; they are variously laid down in the Dutch, French, and English charts, so much so as to agree in no shape one with the other. Many days are required to be passed upon the coasts in examining them, in taking their bearings, and in making observations of latitude and longitude, in order to appreciate the defects of their different plans, and make corrections of the islands. I was not able to effect these purposes, having a distinct mission to attend to; but from such remarks as I was enabled to make, and the conversations I have had with different navigators, whose accounts I have compared with the notes of M. Bellin, and those of Routier the Dutchman, I have been able to give some insight to the navigation of the coasts, and the entry of the different ports. As to the difference in respect of the position and figure of the islands, according to the French Neptune and the Dutch chart, I shall remark that the French chart is more exact in the latitude; but that I give the preference to the Dutch for the representation of the figure, and bearings of the land, of as many as I had the opportunity of seeing. Nevertheless Fulo is very ill placed in the Neptune of 1757, with respect to its latitude. This island is there laid down in 60° 19′; and from three successive observations, made in sight of and very near the land, I found it lay in lat. 60° 3′. Fulo island is ten miles west of the Shetland islands; it is very high, we descrying it at sixteen leagues distance. It is the most remarkable and best land-mark of all the Shetland islands: when seen at eight or ten leagues distant, it has the resemblance of a slipper; it is very healthy, and a vessel may boldly pass between it and the other Shetland islands, for in the channel there is more than two leagues to luff up in. On this island I observed the variation of the needle was 18° 30′. Eighteen leagues west of Fulo I have met with eighty fathoms water, with bottom of large sand, of a grey colour, with black spots: as you approach the land, the sand is more mixed with gravel and stone; and at four leagues from the island there are seventy fathoms water, bottom gravel and black stones. East of this island are the Shetland islands, on the number of which authors do not agree; but there are only three large ones, the principal of which is called the Mainland. The climate of these islands is similar to that of the Orcades; the land produces equally well both barley and oats; the pastures are very good. Fishing, herds of cattle, flocks of sheep, and cows, make up the wealth of the inhabitants. These islanders are of Norwegian origin. Their language is a Gothic dialect, partaking of the Danish, and particularly of the English language. They make turf-fires, as there is no

wood grows on any of the iſlands. They follow the reformed religion. Theſe iſlands are well peopled; above all, round the coaſts, which preſent ſeveral bays, creeks, ports, and anchorages.

Mainland iſland is ſeventeen leagues long from N. to S., and five leagues from E. to W. at an average. This iſland alone includes more ports and anchorages than the iſlands of Yelle, Unſt, and all the others together. I ſhall ſpeak of thoſe only even which are in Mainland, the others not being frequented, nor fit to receive veſſels of any burthen, as well that ſhips of any deſcription abſolutely require pilots of the place for ſteering them. Let us begin with the ſouthern part of Mainland, where there is anchorage for a ſquadron of ten veſſels north of a ſmall iſland called Pard-iſle. The entrance into this road is either by the E. or W. of this iſland, which is ſafe; and the anchorage is in twelve to ſixteen fathoms water, bottom of large ſand. This road is at the extremity of a very high and diſtinguiſhable cape, called Swineburger-head. This is the beſt in this part. Mr. Bellin deſignates three other anchorages between this cape and cape Fitzul, which is the moſt weſtern point of the ſouthern lands, but theſe anchoring places are bad, being expoſed to hurricanes of wind, which render the ſeas dreadful. There is only Quendale-bay which can receive large veſſels. It is large and ſpacious; there is an eaſy entrance, and an eaſy way out. On all the weſtern ſide there is only one road fit to receive veſſels of war, it is that which the Dutch call Magny-nord. Its entrance is three leagues N. of the cape, called Fitzul by the French. On the eaſtern part are the beſt ports and anchorages. Four leagues N. of Swineburger-head, towards the E., a little iſland is ſeen, called Connix iſle, which with the large iſland, forms an excellent road, called Hamburger-haven; there is eight fathoms water; it may be entered by the N. or by the S.: but the beſt harbour of the whole of the Shetland Iſles is that of Laerwyck, which is four leagues more to the N. than the laſt. The roads of Laerwyck would contain a whole fleet. Every year about St. John's day, five hundred fiſhing veſſels are ſeen anchored before the town of Laerwyck. The Dutch, who every year reſort to theſe coaſts for the herring fiſhery, call theſe roads the Great-bay, or Braſſa-ſound, on account of the iſland of Braſſa, which forms the harbour and protects it from the eaſt winds. To enter Braſſa-ſound from the ſouth, Braſſa muſt be left to ſtarboard at a cable's length, and the courſe be continued up the channel till you come before the town of Leerwick, where there is anchorage in five, ten, or fifteen fathoms, according as you go near to, or keep diſtant from ſhore. North of the town are the veſtiges of a fort which commanded the roads, and which was deſtroyed by Mr. Bart. The entrance of the road of Laerwyck is eaſily known by Noſs iſland, which is alſo called Hanging-cliff, on account of a remarkable rock which hangs over into the ſea, forming a natural vault. This iſland is eaſt of Braſſa, and ſerves as a landmark for the port of Laerwyck; the fleet enters ſouth of Braſſa, and the eddy conſequently carries them to the ſouth. The tide is ſtronger towards the north of the channel, and the paſſage more difficult. This is the mode of getting out through the paſſage called North Sound, and theſe the precautions neceſſary to be taken. I obſerved that the flood bore to the north. You ſteer ſo as to leave to ſtarboard a ſmall iſland, called the Holm of Crueſter, at about a mile's diſtance, on account of the rocks which are under water at half a quarter of a league to the weſt of the iſland. When this iſland is paſt, and bears E. quarter S. E., there is nothing further to be apprehended from the rocks called Fabarre. You continue your courſe, keeping mid-channel, until you perceive the channel begin to narrow; then, in order to avoid a bank, which is in the middle of the narroweſt part of the channel, and over which there is but twelve feet at low water, you muſt paſs by either on the one or the other ſide

of

of this bank: if you near the iſland of Braſſa, you muſt keep at two cables' diſtance, but if the weſtern ſide be kept, you may near the ſhore to within half a cable, on account of its being very ſafe; when through this channel the road becomes wide, but ſoon after it becomes much narrower than before. It is requiſite then to ſteer well and ſail by an iſlet or rock called Scotland, in preference to coaſting of Braſſa; becauſe in this part Braſſa has rocks under water about it, which extend for a mile from ſhore. When you have doubled Scotland and the moſt northern point of Braſſa, the paſſage is very good between the rocks called the Brothers and Green iſland, which you have to larboard, and the iſland of Beoſter, north of Braſſa, which is left to ſtarboard. When the iſland of Beoſter is ſailed by, the paſſage of North ſound is gone through, and you are at liberty to take what courſe may ſuit.

North of Braſſa iſland, between it and the point of Mainland, called Mull of Enwick, the ſea forms a large bay, where are four good anchoring places, called Deals Woe, Laxford-woe, Webſter-woe, and Catford-woe. I ſhall not give a deſcription of the three firſt, which can only receive merchant veſſels or corvettes; but the anchorage of Catford-woe, which is the moſt northerly of the four, is alſo the moſt conſiderable; it forms three creeks, which afford three good ports, the one is E. S. E., the other W. N. W., and the third N. Theſe ports can receive any veſſels of war, and afford ſhelter from all winds. The anchorage is in from three to fifteen fathoms water, according as you near the land. When from the eaſtern ſide of the Shetland iſlands you are deſirous of entering one of theſe ports, you muſt ſteer for the iſle of Noſs and the Hanging cliff, afterwards bear N. W. to paſs between Green-iſland, which is left to ſtarboard, and the rocks called the Brothers, which are left to larboard. Or, if the wind ſerve better, you may paſs between Green-iſland to larboard and Houſe Stack and Glatneſs to ſtarboard. From Swineburger-head to Noneſs, the flood-tide runs to the north; from Noneſs to Braſſa, and from Braſſa to Catford-woe S. S. E. The ebb-tide runs in a contrary direction. On the weſtern ſide the flood-tide runs ſouth from Swineburger-head to Scalluwa, and the ebb-tide runs north.

I have now to ſpeak of the ſoundings for making land. I have already obſerved, that, on approaching theſe iſlands, the bottom, which is always large ſand, is more mixed with gravel and ſtones. All round theſe iſlands at about four leagues diſtance, there are ſeventy-five fathoms water. It muſt however be obſerved, that on the eaſtern ſide there are three or four pits or wells where there is more than a hundred fathoms water. Four leagues north of the Unſt iſland, the moſt northern of the Shetland iſlands, during my ſecond voyage, I took an obſervation in fine weather, and found that the moſt northerly highlands of Unſt lay in latitude 60° 44′. The highlands of Shetland are not very lofty; they may however be diſcerned ten leagues at ſea. Twelve leagues eaſt of theſe iſlands I noticed the variation 18° 42′. I now take up my journal.

The twenty-ninth of Auguſt I was forty leagues from the iſlands of Ferro. The rock at the north of theſe iſlands, called the Biſhop, was ſouth of me, diſtant as deſcribed.

The thirtieth, weak winds varying from S. E. to S. W., a fine ſea, and continuation of foggy weather. I kept the cloſeſt I could, whether the larboard or ſtarboard tack, to make the ſouth, and endeavour to fall in with the iſland Enkeuyſen. I ſounded every now and then becauſe I ſaw eddies or whirlpools made by the tides, but I could find no bottom.

The thirty-firſt, a ſouth wind rather freſh, a thick fog; I ordered the officer on watch at the beginning of the night to bring to till morning, but if the wind increaſed to haul

haul it. The wind getting round to the eaſt and blowing hard, the officer of the watch came to inform me, that he had taken in the foreſail on account of its blowing hard from the eaſt to E. S. E. with a very high ſea. As the wind was favourable for returning to France, as I had not ſeen any thing of the fiſhing veſſels for ſome days, as the ſeaſon for the fiſhery was far advanced, and the continual fogs did not allow of my rendering any further aſſiſtance to the French ſhips, I ſteered W. S. W., foreſails and topſails ſet to paſs between Iceland and the iſlands of Ferro, and thence to continue my courſe for Breſt.

The firſt of September, the wind eaſt very freſh at noon, I took an obſervation, and found myſelf in latitude 60° 8′, and in longitude by reckoning 15° 58′ W. of Paris. The middle of the bank of which I ſpoke in the beginning of my journal bore W. quarter S. W. exactly, twenty-five leagues diſtant, and the iſland of Rokol at the S., forty-five leagues diſtant: the iſland of Rokol is not marked in any French chart, but I am certain of its exiſtence. I have requeſted M. Bellin to inſert it; its ſituation is in latitude 57° 50′, and longitude 16° 0′ W. This iſland is very healthy; it is a ſharp rock, which, at four leagues diſtance, looks like a ſhip; it has frequently been miſtook for one. Eaſt of Rokol iſland, a quarter of a league away from ſhore, is a rock under water, with breakers. Under nearly the ſame latitude as Rokol, but much more to the W., is another iſland. It is Buſs Iſland; it is not either on the French charts, but it exiſts in latitude 58° 0′, longitude 28° W. On the night between the firſt and the ſecond, we ſaw an Aurora Borealis, which afforded us the moſt beautiful ſpectacle that nature can diſplay. From ten in the evening until one in the morning, the heavens were on fire throughout the arctic hemiſphere, the night was as brilliant as the day; I read a letter at midnight as eaſily as I could have done at noon. We firſt of all ſaw a luminous cloud in the form of an arch, which occupied half the firmament. From this about eleven o'clock roſe columns perpendicular to the horizon, and alternately white and red. The upper part of theſe columns towards midnight changed into ſheaves of a flame colour, from the centre of which arrows of light iſſued into the air like rockets; at length after midnight, theſe columns, which were arranged with ſuch admirable ſymmetry, were confounded all at once in a brilliant chaos of cones, pyramids, radii, ſheaves, and globes of fire. This celeſtial appearance diſappeared gradually; but the air was full of light even till day.

Phenomena of this deſcription have been ſeen in all ages and countries; but what are their origin? Why are they obſerved towards the north? As every one is allowed to have his own ſyſtem, I ſhall hazard a conjecture on the probable cauſe of the aurora borealis, called ſo from its luminouſneſs reſembling that of dawn, although more commonly known by the name of the northern lights, on acccount of their being ſeen in the north. 1*mo*, I imagine the matter of the aurora borealis to be the ſame as that of lightning or electricity. 2*do*, That the diurnal motion of the earth occaſions a continual flux of this matter towards the poles; which makes theſe meteors moſt viſible in the neighbouring regions. 3*tio*, That a certain denſity, temper, and particular conſtitution of air be requiſite to cauſe to approach, heap together, and compreſs the igneous particles ſo as by their fermentation to produce thoſe ſheaves, rockets, and luminous columns which are peculiar to the aurora borealis. 4*to*, That all the rapid movements, the lateral divergencies, the ſudden appearance of columns, &c. reſult from their mutual and alternate attraction and repulſion, a natural property of electric fire, as is proved by the alternate attraction and repulſion of gold leaves and light bodies by electrical globes. 5*to*, That if this meteor appear but rarely, it is becauſe the air poſſeſſes ſeldom the requiſite denſity, or is properly conſtituted to produce it.

The moſt celebrated philoſophers have long maintained an opinion that the element of fire was diſperſed throughout exiſtence, and that ſolid and fluid bodies were abundantly impregnated with igneous particles. I conceive that the æther of Newton, the elementary fire of Boerhaave, and electric fire, are the ſame ſubſtance, whoſe different effects vary in proportion to the impulſe, agitation, direction, ſtrength and quantity of the aſſembled matter; hence the action of the ſun on this ſubſtance produces the double advantage of light and heat. Thus the attrition of a globe of glaſs reunites a certain quantity of it, which managed and directed with art, produces the various phenomena of electricity. Thus the ſudden and violent colliſion of two hard bodies elicits ſparks, and the continual friction of two bodies of whatſoever deſcription they may be, excites and originates elementary fire in ſufficient quantity to inflame and conſume any combuſtible matter expoſe to its action.

When a great quantity of particles of fire is accumulated in condenſed clouds which compreſs and drive them together, the particles of fire then ſtriking the one againſt the other, inflame, ſparkle, kindle into a blaze, and burſt with exploſion the priſon which incloſes them. Hence the flaſh of lightning and the thunder clap; and if the lightning be ſeen before the thunder be heard, it is becauſe the vibrations which expand from the igneous matter are more rapid of flight than the undulations of the air which bring us the ſound.

When clouds have leſs denſity; when they paſs over ſpace more lightly and more freely; when they contain only a ſmall quantity of the particles of fire, then, ſhould they unite and claſh together, they kindle into flame without exploſion; they produce that ſilent lightning, and thoſe falling ſtars which ſhine and diſappear. When the atmoſphere is not too much overſpread with clouds, and that they have no more than the denſity requiſite for ſuſtaining and leading on the particles of fire in their ſphere of mutual attraction, without keeping them in, without heaping or preſſing them, then no exploſion ſucceeds; but the particles of fire inflame in the open air, and according to the different figures, though different conſiſtence of the inflammable matter, and the different refractions of light, thoſe globes, pyramids, radii, ſheaves, and columns differently coloured of the aurora borealis are ſeen. The identity of the eſſence of lightning and that of electricity, which has latterly been diſcovered, and whoſe reſpective effects are very various, greatly ſupports the hypotheſis, that the light of the ſun, of lightning, electric phenomena, common fire, are only different effects of the ſame cauſe differently acted upon, diſpoſed, modified and circumſtanced. Theſe auroræ boreales are greatly uſeful to the inhabitants of the polar regions; it ſeems as if nature was deſirous by them to make amends for the abſence of the ſun, and the privation of his beams.

The ſecond of September, having ſteered S. W. for twenty-four hours, the wind going round from S. E. to N. by degrees, I took the latitude at noon, and found it 58° 2′, and longitude 17° 10′ W. by reckoning. I was too much to the weſt to make Rokol iſland, which is diſtinguiſhable at no greater diſtance than four or five leagues. Not ſeeing this iſland, I conjectured that my reckoning was good, for had I been ten leagues more to the eaſt, I muſt have ſeen it; and if, on the contrary, I had been the ſame diſtance more to the weſt, I ſhould have ſeen ſome part of Iceland.

The third, fourth, and fifth, and the ſixth, the wind veered backwards and forwards from ſouth to weſt, blowing very freſh and a ſtrong ſea. When it blew from the weſt I ſteered ſouth, when from the ſouth, weſt, in order to take advantage of the W. and S. W. winds. The ſixth, at noon, the wind ſkipped round to the W. N. W. in an inſtant. Latitude 51° 10′, longitude 16° 52′ W. of Paris. After taking the latitude, I ſteered S. quarter S. W., in order, before night-fall, to get ſouth of the rocks called

Brazil, which are laid down in the Dutch charts in latitude 52°, and in thoſe of M. Bellin in 51°. At ſix o'clock, the wind blowing freſh from the N. W., having paſſed the latitude of Brazil, I ſteered S. S. E., keeping rather more to the eaſt as I advanced towards the ſouth.

The ſeventh at noon I was in latitude 48° 50′; Uſhant bearing E. 4° S., ſeventy-eight leagues diſtant.

The eighth, at eight in the morning, having ſteered continually E. S. E, from yeſterday noon, the wind W. and freſh, I changed my courſe to S. E. quarter E., on account of the wind veering to S. W., and the poſſibility of its getting to the S., as well becauſe I had to miſtruſt the currents of the channel, that is to ſay, of the flood-tide, which is ſtronger than the ebb: I ſounded at four in the morning, and met with one hundred fathoms water, bottom red ſand, with pieces of broken ſhining ſhells. At noon I was in latitude 48° 21′, Uſhant bearing E. 4° N., twenty-ſeven leagues diſtant. I continued ſteering S. E. quarter E. till half paſt four, when I ſounded. I found ninety fathoms water, bottom of ſand, not red and ſhells not ſo much broken as in the morning. This ſounding and my reckoning placed me in the direction of W. quarter S. W. of Uſhant, eighteen to twenty leagues diſtant. At ſeven o'clock the wind became W. the weather milder, the ſky clear, I ſteered north, in order to keep before the ebb-tide, and at ten o'clock S. S. W. to take advantage of the flood. At the opening of the Iroiſe the tides run S. W. and N. E.

The ninth, at two in the morning I ſounded, finding the ſame depth, and ſame bottom, I ſteered E. quarter S. E. the wind blowing W. N. W. very freſh, a fine ſea, but cloudy weather with ſome rain, falling at the bounds of the horizon, which the wind was bringing towards us. At noon I fell in with Uſhant laying N. E. five leagues diſtant, there was one hour of flood to come, I hoiſted all ſail to take advantage of the tide, and anchored in Breſt roads at five o'clock.

Thus finiſhed my firſt voyage, in which I have inſerted ſome obſervations made on my ſecond voyage; but as I could not include the whole, I have ſubjoined them in the form of a ſupplement to the four parts, which have been read before.

SUPPLEMENT

TO THE FOUR PARTS OF THE RELATION OF A VOYAGE TO THE NORTH SEA.

Containing Return to Iceland; paſſing between Birds iſland; abridged Account of Greenland; Deſcription of the Port of Brandſoom in Norway; Remarks on the Soundings, and Navigation of the Dogger-Bank; Entrance into Oſtend; Notes relative to entering the Port and that of Dunkirk; Return to Breſt through the Channel.

AS ſoon as the frigate La Folle was diſmantled, I ſet off to render an account of my miſſion to the Duke de Praſlin. This miniſter informed me that I muſt make ready to repeat the voyage in the ſpring. I requeſted of him in preference to a frigate the corvette l'Hindrolle, of ſixteen ſix-pounders, with a complement of one hundred and twenty men; on account of ſuch a veſſel being the fitteſt for the operations which I had planned. I repaired to Breſt at the end of April to begin equipping the veſſel.

The tenth of May, I was in the roads, and I only waited for a fair wind to ſet ſail. The Duke de Praſlin was ſo obliging as to grant me the two firſt officers I had on board La Folle, Meſſrs. Duchatel, and the Chevalier Ferron, two officers full of zeal and genius; M. le Chev. Bernard de Marigny, an officer of diſtinguiſhed merit, gave proofs

of his attachment to the ſervice in joining us. He had recently commanded a king's ſhip, and the fatigue of a new voyage full of hardſhips, had nothing in it to deter him. I had for the fourth officer M. Soyer de Vaucouleur, maſter of a fire-ſhip, who had commanded ſeveral privateers, a man of the beſt diſpoſition.

I left Breſt the fifteenth of May, 1768, with a weak E. wind; my intention was to paſs by St. George's channel, but the wind which came round to the N., blowing very freſh, and continuing ſeveral days prevented me: I paſſed to the weſt of Ireland, as on my firſt voyage; I kept however more cloſely in ſhore, on account of the banks and high bottoms, which I before noticed.

Nothing intereſting occurred before the twenty-ſeventh, at eight in the evening. We had a freſh gale from the weſt with a heavy ſea; and were ſteering north, when we perceived before us a tide-bed, covered with ſea weed and foam; we were ſhortly in the midſt of it, and the ſea, every where elſe running very high, was here as calm and as even as in a pond; except the ſurface of the ſea's trembling and boiling up the current, bearing us with rapidity to windward. I immediately brought to and ſounded; we found no bottom, but I am perſuaded we were in the neighbourhood of rocks, the more ſo from our being by reckoning between Rokol and St. Kilda iſlands: there is anchorage in eighteen fathoms water ſouth eaſt of the largeſt of the St. Kilda iſlands, and a paſſage between that, and the one which lays N. quarter N. E. of it. In caſe of need a veſſel may anchor in this channel in twenty-ſix fathoms water, ſand and ſtony bottom.

The thirty-firſt, ſteering north to make land, cape Heckla bearing by eſtimation N. W. twenty leagues diſtant, we encountered a furious gale of wind from the eaſtward, with a thick fog. As the weather was unſeaſonable for making land, and as I had a long way to make to the weſt, I reſolved on bearing W. N. W. and N. W. quarter W. before the wind, till the weather ſhould change and the ſky appear. My intention being in caſe the weather ſhould not clear up, to ſteer under bare poles, and ſtand to ſea till ſuch time, as I ſhould find myſelf in the longitude of Birds' iſlands.

The firſt of June, the wind fell towards night, but the fog continued very thick, which cauſed me to keep on the ſame tack, under eaſy ſail.

The ſecond, in the morning the ſky being ſomewhat clear, the wind ſtill E. I ſteered N. E. quarter N. in order to make land. At noon I found myſelf in latitude 63° 20′, and continued the ſame courſe; at length, at two o'clock in the afternoon we made the Birds' iſlands. That which is neareſt to ſhore bore N. E. quarter E., four leagues diſtant, and another weſt of the former bore N. W. I continued ſome time ſteering N. E. quarter N. for the purpoſe of getting in ſhore, at length I bore away at N. quarter N. E., to fall in with the iſlands, and paſs between the firſt and the ſecond, on the ſide of the main land. The two iſlands are full two leagues aſunder. I found in this paſſage tide-beds and eddies, which made a dreadful noiſe. The direction or courſe of the tides is N. W. and S. E. North of the two iſlands between which I ſailed, I perceived the paſſage between the main-land and the firſt iſland; it appeared to me ſcarcely a league wide; on account of the currents, it ought not to be attempted except with a ſtrong and leading wind. A little north of theſe two iſlands, I ſaw three others at ſea, which appeared to me to bear W. quarter N. W. of the former. All theſe iſlands are but ſharp and inacceſſible rocks. I continued my courſe N. quarter N. E. to fall in with Mount Jeugel, and afterwards get under Bredervick point, where all the fiſhermen were aſſembled.

The fourth, I anchored at Patrixfiord, where I remained ſome days to give to the French veſſels what aſſiſtance they needed. I ſay nothing here of the bearings of the anchorage, or what relates to it having already mentioned it before. After remaining

eight days at Patrixfiord, I made ready to depart for Berghen in Norway, to take in a month's proviſions; but before I leave the weſtern part of Iceland, it will be proper to ſay ſomething of Greenland, the land moſt contiguous to Iceland.

Reſpecting Greenland we have only an imperfect knowledge Some geographers look upon it to this day as an iſland, others as a peninſula. This country was diſcovered by a perſon of the name of Gunbiorn, and made more particularly known by Eric, ſurnamed Red-head in 982. The green paſtures of the country cauſed him to call it Greenland. He ſaw ſavages there, who doubtleſs had paſſed over there from America, but of the origin of which there is nothing certain. The king of Norway being informed of this diſcovery, cauſed miſſionaries to be ſent over with a colony. The Greenlanders in 1256, revolted againſt King Magnus, but this prince aſſiſted by the Danes, reduced them again to ſubjection in 1261. The black plague which ravaged all the north, interrupted navigation to Greenland, and for two ages the country remained entirely forgot. Martin Frobiſher left England in 1576, to attempt to reach Greenland, but the ice did not allow of his landing until 1577. He gave his name to a ſtrait in latitude 63°. In 1585 John Davis went more to the north, and gave his name to a ſtrait which he diſcovered. Chriſtian IV. in 1605, ſent three veſſels thither, which eſtabliſhed a trade with the Greenlanders, five of whom were brought to Copenhagen, but died of grief at being ſeparated from their country; the next year five ſhips were diſpatched, and in 1616 this prince diſpatched Captain Munck with two veſſels for Hudſon's Bay, in order to diſcover a north-weſt paſſage. It is Captain Munck who gave the name of Farewell to the cape, which forms the ſouth part of Greenland. In 1636 ſome merchants of Copenhagen ſent two veſſels to Davis's ſtraits, who trafficked with the Greenlanders and brought back a large quantity of gold duſt. It is not known for what reaſon this trade was diſcontinued by the Danes to 1718, when a clergyman full of zeal, obtained an order from the king to go over to Greenland with all his family. His name was Egede, and all the Greenlanders to whom he preached the goſpel, had the higheſt veneration for him. In 1731 the King of Denmark recalled all his ſubjects from Greenland. Egede alone remained with all his family. The king ſent thither again in 1734, and at this time the commerce of Greenland is carried on by the general company of Copenhagen, which every year diſpatches three ſhips to that country.

The coaſts of Greenland are difficult of acceſs on account of the ſhelves and ice which ſurround them. It is even affirmed that Frobiſher's ſtraits are at this day ſo full of ice, that its exiſtence is diſputed. The eaſtern part of Greenland, which is oppoſite to Iceland is entirely inacceſſible, owing to the ice floats which come from Spitzbergen, and which even ſhut the paſſage ſometimes between Iceland and Greenland, which is thirty-five leagues wide. This happened in 1766, in that year it has been already obſerved the fiſhing veſſels were never able to double cape North.

The climate of Greenland is cold, and the weather very inconſtant and variable. In the vallies, the ground conſiſts of marſhes and turf, and the mountains, which are ſo many ſharp rocks, are covered with ice and ſnow; trees are met with here in no greater abundance than in Iceland. There are in Greenland ſeveral mountains of Amianthus. Very ſmall white hares are found here, and rein-deer, but which have no reſemblance to the Lapland rein-deer. The foxes there are grey, white, and blue; bears are met with, but which no ways reſemble the bears of other countries, they have more ſuppleneſs, and are more nimble. No other birds are ſeen but thoſe called Riper by the Icelanders, which build their neſts in the higheſt rocks; but as well as in Iceland, there

there are quantities of aquatic fowl. The rivers are full of trout and ſalmon, and on the coaſt plenty of fiſh and whales are caught.

The Greenlanders are ſmall of ſtature, groſs and fat, they have all of them black hair, and red and brown countenances; they are ſubject to colds in the head, to the ſcurvy, to complaints of the eyes and the breaſt. They knew nothing either of phyſicians or ſurgeons, they have prieſts, who ſerve them as well for philoſophers and doctors, for whom they entertain the higheſt reſpect, and whom they frequently conſult. The language of the Greenlanders much reſembles that of the Eſquimaux Indians, who inhabit North America. Their dreſſes are made of birds' feathers, rein-deer ſkins, and ſeals ſkins ſewed together with the guts of them. The Greenlanders have huts for the winter, and in the ſummer live in tents; their huts are ſimilar to thoſe of the poor Icelanders; their tents are made of ſeals' ſkins. They make but one meal which is at night. They live upon hares, kids, ſea-dogs, different ſorts of birds, and fiſh, and drink nothing but water. Neither arts nor ſciences are to be met with among the Greenlanders; their trade conſiſts in lard, whalebone, unicorns' horns, kid ſkins, rein-deer, ſea-dogs, and foxes. They take, in barter, linen and other neceſſaries. Theſe people have a ſort of religion; they acknowledge a ſupreme Being, believe the ſouls of the dead aſcend to heaven, and go a hunting there, and that the bodies remain to rot in the earth; women are buried alive as ſoon as they appear to be in a dying ſtate.

The above is all that is moſt intereſting of the hiſtory and manners of the Greenlanders, there remains I ſhould ſpeak of their boats for fiſhing, and their manner of fiſhing and navigating. Hunting and fiſhing are the only occupations of a Greenlander. They fiſh in their lakes, rivers, and rivulets, but their principal fiſhing is in the ſea; where they catch whales, unicorns, and ſea-dogs, cod, and other fiſh, which abound upon the coaſt. Their hooks were formerly of bone, but they have ſteel hooks now which the Danes bring them. Their lines are made of ſmall ſplinters of whalebone, and their caſting nets of deer's guts twiſted, the harpoon which they uſe for ſtriking the whales, is furniſhed with a forked bone, or a pointed ſtone, ſome have alſo harpoons of iron, which they barter for with the Danes giving them oil and greaſe in exchange. As theſe poor people have but little wood and iron, they make uſe of the precaution of faſtening to the middle of every harpoon which they throw, the bladder of a ſea-dog, that if the harpoon ſhould not ſtrike the fiſh or detach itſelf from it, it may float on the water, and be readily found again, this expedient was known to the fiſhermen of the Atlantic Ocean, for Opien in his Halieuticon ſpeaks of it, lib. V. v. 177. "They dart, ſays he, large ſacks blown up by the breath, and faſtened to a cord, immediately at the fiſh, as it is about to plunge." The arrows which the Greenlanders uſe, are armed as well either with bone or ſharp ſtones, and they exerciſe themſelves in drawing the bow, from their tendereſt infancy. The inhabitants of the new iſland on which M. Bougainville landed lately in the South Sea, not having any iron, make uſe of bone for heading their arrows, of ſcales and ſhells for knives, and ſharp ſtones for felling of trees; theſe examples ſhew that neceſſity is the mother of invention, and that induſtry is every where alike. The canoes or boats, in which the Greenlanders embark for the fiſhery, are made of wood faſtened together by traverſes, joined with thin ſlips of whalebone at different diſtances. They are lined with the ſkin of ſeals, well ſewed together with animal fibres inſtead of thread, and the joints are well greaſed to prevent water from penetrating. Theſe canoes are of different ſizes. Some are capable of carrying twenty perſons with their arms and baggage; and a good quantity of fiſh or whales' blubber. Theſe canoes have a ſail made of the bowels of the whale, ſplit and dried, and ſewed

one

one to the other. Hiſtorians informs us, that this mode of navigating is common among all the northern people that have been diſcovered. Scheffer cites ſeveral examples in his work, De Militia Navali Veterum. The *Muſæum Regium Danicum*, and the authors which M. Haſæus refers to in his diſſertation *de Leviathan Jobi* may be conſulted. I have obſerved that the Greenlanders had no knowledge of arts and ſciences. They are unable to count farther than twenty-one. They count by moons. It is by the courſe of that planet they compute the return of the whales, and other fiſh to their coaſt.

The fifteenth of June, I ſailed from Patrixfiord to go to Norway; it was during this run that I ſounded, and made the obſervations on the Shetland iſlands, and the Orcades, which I have before detailed to the reader; I paſſed ſouth of Fair iſle in the little Tuns, and afterwards directed my courſe towards the ſhores of Norway.

The firſt of July, in the morning I made land. I took the latitude at noon, five leagues north of the rocks or iſlands which are called Utſires; and found theſe iſlands to be placed too far ſouth by 15′ in the Neptune. On the Utſires, pilots are to be met with for the Berghen roads. I ſhall not enter into any further account of the bearings of this coaſt, all that was neceſſary to ſay having been mentioned before. At two o'clock in the afternoon, being about three leagues from ſhore, Norwegian pilots came on board, who made me luff up to make the paſſage of Rooth-holm; but the wind, which blew but gently from the north, at length entirely died away, and we had calm all the night long.

The ſecond, at three o'clock in the morning, a feeble wind aroſe in the N. E., with a thick fog: we luffed under the land, keeping always a league from ſhore; and by ten o'clock it clearing up, we entered the above-mentioned paſſage of Rooth-holm, through which I paſſed the year before; but inſtead of proceeding up it as far as Ingeſon, as on our firſt voyage, we anchored in the port of Brandſoom, which is weſt of Ingeſon: it is larger, and the entrance more commodious. The entrance of Brandſoom is known by an iſland, in the ſhape of a pye, at the opening of the port, and which is very healthy: three veſſels of war may moor there in ſafety. There is always a fine ſea, and no wind is felt there. This port, is to ſtarboard on paſſing to the north of Bomel; it is poſſible to enter it by any wind from the N. W. to the E. A veſſel mooring there ſhould caſt anchor in fifteen to twenty fathoms, with gravelly bottom, and ſend a ſmall anchor with a tow-line on ſhore from the ſtern, ſouth of the ſtream-anchor.

The third, it rained, the ſky was overcaſt, and the wind blew freſh from the ſouth. I ſailed at two in the afternoon to get up to Berghen. After proceeding three or four leagues a calm came on, and we were obliged to be towed by all our boats to get to an anchorage.

The fourth, in the morning, a light wind aroſe from the S. S. W.: I got under ſail, and anchored at Berghen at half paſt two, in the ſame place I had done in the frigate La Folle. After having taken in what proviſions and refreſhments I required, I left Berghen on the twenty-fourth of July, and went out through the northern paſſage, as I had done the year before to return to Iceland.

The thirtieth, at night, conſidering myſelf twelve leagues S. E. of Langerneſs, the wind northerly, with fog, I ſounded, but found no bottom, and brought-to. I ordered the officer of the watch to ſound every two hours during the fog, and to ſteer W. N. W. if it diſperſed ſufficiently for diſcerning the diſtance of three leagues.

The thirty-firſt, at five in the morning, we ſaw land; I continued my courſe to get near it, but the wind blew very faintly from the north. At noon I found the latitude 66° 26′. We ſaw in the afternoon a number of doggers, or fiſhing veſſels, all of whom

that

that I ſpoke told me there was nothing new in the fleet. We had ſeven or eight days of fine weather, which I employed in ſounding and taking bearings.

The tenth of Auguſt, ſeeing the appearance of bad weather, I got off the coaſt.

The twelfth and thirteenth, we had a gale of wind from the S. W., with a terrible ſea. We brought-to with the ſtay-ſails ſet, and in this attitude my veſſel bore very well. From the thirteenth the wind was continually changing, with foggy weather; at length, on the nineteenth, ſeeing the weather did not clear up, and that the ſeaſon was advanced, I run for the Shetland iſlands.

The twenty-fourth, being by log fifteen leagues E. N. E. of Boqueneſs, I ſounded and found ſixty fathoms water, muddy bottom. I continued my courſe four leagues, on the W. N. W. tack, and found, on ſounding, ſeventy fathoms water, with a muddy ſand. I purſued my way under the ſame breeze, and conſidered myſelf four leagues eaſt of the middle of cape Boqueneſs; I did not perceive it; I ſounded and found fifty fathoms water, bottom fine ſand mixed with mud: I then ſteered S. quarter S. E. to fall in with the Dogger-bank, with a very freſh breeze from the north, as the horizon was clear, and cape Boqueneſs very high, and as I had ſpoken to ſeveral herring-fiſhers, who told me they were twelve leagues from land, I am ſurpriſed at not having ſeen Boqueneſs, and I thence conceive it to be more north than is marked in the French chart. This chart places it in lat. 57° 32′, but the Dutch charts place it in lat. 57° 58′. At the point of Boqueneſs is a ſmall bank, which the Dutch call Vatterburg, which ſignifies rat's-tail, on account of its figure. On this bank there is at low water three fathoms water; there is a paſſage a league wide between the bank and the ſhore. South of Boqueneſs an iſland is perceived, and ſeveral rocks, and near them there is anchorage in ten fathoms water, ſheltered from all winds from the north. The currents run ſouth along all theſe coaſts.

The twenty-ſixth, at noon, I took the ſoundings on the Dogger-bank, and from that inſtant I did not ceaſe heaving the lead till I reached the banks of Oſtend. As the detail of the different courſes I took in ſounding would be tedious, I ſhall only deſcribe the ſounding, and the points of latitude and longitude.

TABLE OF SOUNDINGS FROM THE NORTH-WEST EXTREMITY OF THE DOGGER-BANK TO THE BANKS OF OSTEND.

Lat.	Long. W. from Paris.		Fathoms.
55° 9′	0 59	grey ſand with black ſpots	26
55 3	0 55	ſame bottom	21
54 59	0 52	ſame	20
54 56	0 50	flint and ſmall ſtones	18
54 53	0 47	ditto	14
54 50	0 39	ditto	15
54 53	0 34	ditto	18
54 54	0 19	ditto	18
54 48	0 21	ditto	18
54 44	0 14	ditto	17
54 39	0 7	ditto	15
54 35	E. 2	ditto	15
54 33	0 6	fine ſand and ſhells	14
54 31	0 9	fine ſand	12
54 30	0 18	ſame, extremity of Dogger-bank	18
54 20	0 33	fine white ſand and ſhells	26

54° 7′

Lat.	Long. E. from Paris.		Fathoms.
54° 7′	0 41	large ſand and ſmall pebbles	28
53 54	0 40	ſame bottom	24
53 50	0 40	muddy ſand	31
53 47	0 39	ſame	22
53 35	0 32	ſame	20
53 17	0 23	fine red ſand mixed with black	18
53 10	0 21	the ſame	25
53 7	0 21	the ſame	20
53 5	0 20	fine white ſand (white bank)	17
53 0	0 18	the ſame	22
52 46	0 15	fine grey ſand	28
52 26	0 46	red and grey ſand	25
52 14	0 47	ſame bottom	17
22 10	0 40	fine ſand	19
51 50	0 28	ſand and ſmall gravel	20

The variation of the needle 19°.

I traverſed the Dogger-bank, and the banks ſouth of this firſt, taking ſoundings every hour, of which the table is annexed. Veſſels which are paſſing over the Dogger-bank ſhould take the middle of it as much as poſſible, for on the eaſtern ſide the currents are violent, and run to the Categat; and on the weſtern ſide there is no more than eight or nine fathoms water, which occaſions ſurges ſo much the more dangerous, as the bottom is large gravel and ſmall pebbles. South of the middle of the Dogger-bank there is twenty-five to thirty fathoms water, muddy bottom. Ten leagues ſouth of the middle of the Dogger-bank is the *white water*; the bottom is of white ſand, and there is ſixteen or ſeventeen fathoms water. Five leagues eaſt of this bank the Well-bank is met with, the bottom of which is of ſtone; there are eighteen fathoms water on it. Weſt of this bank the bottom, which is a yellow ſand and black gravel, increaſes to twenty-two fathoms. A little lower down are the Lemon-banks, very dangerous; on theſe there is no more than one fathom at low water. Many veſſels are annually loſt there. The middle of Lemon is about ſeven leagues N. N. E. of Yarmouth. The banks of Yarmouth alſo are to be guarded againſt. By all that I have obſerved, it muſt be evident that the weſt ſide of the Dogger-bank is very dangerous. In calms, ſhips anchor on the Dogger-bank to wait for wind and tide. The fiſhing veſſels of Dunkirk, decked boats of thirty-five tons, anchor there in all weathers; they pay out three hundred fathoms of cable, and meet frequently dreadful gales of wind while at anchor. By accident ſometimes a veſſel is loſt in this manner: the veſſels on tacking fall foul of their cable, and on the after-tack run again upon, when, ſhould the cable paſs under the keel, the veſſel is ſometimes overſet.

The twenty-eighth of Auguſt, at three o'clock in the morning, having ſounded and found twenty-four fathoms water, with ſandy bottom, and being within the firſt of the Flemiſh banks, I caſt out a ſmall anchor to wait for the tide. At ſix o'clock the wind blew freſh from the E. S. E. I ſet ſail and ſteered S. S. W. At nine o'clock I ſaw the towers of Oſtend, which bore S. quarter S. W., five leagues diſtant. I continued running S. S. W., on account of the flood running ſtrongly to the eaſt. At noon the towers bore ſouth, two-thirds of a league from me. I fired three guns to cauſe pilots to come on board, who were remiſs; and at half paſt noon I entered between the jetties. The tide began to ebb from the port, which made me run the hazard of being driven on a

bank to ſtarboard on entering. Luckily a ſloop belonging to the port was there, which quickly carried a laſhing to the moorings of the eaſtern or larboard ſide of the jetties on entering. On coming from the north to make Oſtend, two towers at firſt are diſtinguiſhed, the largeſt of which has a ſteeple, and belongs to the pariſh church; the other, which is terminated by a gallery, is that of the clock of the town-houſe. In making the land the one muſt be kept in line with the other, until you reach the buoy, which is at the weſtern extremity of the traverſe, on which is a little red flag; this muſt be kept to larboard: you then ſteer for the eaſtern jetty, which is the ſafeſt, and which you muſt keep cloſe to, whether in coming in or going out. At high water you paſs over the Stroom and the Traverſe: on theſe two banks the water riſes eighteen feet. A pilot, kept for the purpoſe, takes care at half-flood to hoiſt a ſmall blue flag, in order to ſhew that ſmall veſſels can enter. To give information to large veſſels that they may enter, he hoiſts a large blue flag, on which there is an eagle. When none is hoiſted, it is a ſign of there not being ſufficient water; in that caſe, if the ſhip be at ſea, ſhe muſt either tack or caſt anchor: a veſſel may anchor in the roads, or moor on the Stroom; and W. N. W. of the Traverſe, in ſix or ſeven fathoms water, with ſandy bottom. The ſpring-tides riſe nineteen feet, and neap-tides fourteen feet. At low water there is but ſix or ſeven feet on the Stroom. The mode of avoiding it is to keep the two towers open, by about the ſpace of the ſize of the largeſt tower, which muſt be kept to the eaſt. At the eaſtern point of that bank there are three fathoms water. There is only three feet water on the Traverſe, or bar, and even but two a little eaſt of the jetty, at the end of the moorings. In ſhort, to enter Oſtend, great attention muſt be paid to the time of high water, which is at twelve o'clock in that port, and new and full at three o'clock upon the banks out at ſea. Attention muſt be paid as well to the flood running with rapidity E. N. E., on which account a ſhip ſhould ſteer a little within the eaſtern jetty, and manage the ſails according to the wind. The entrance of the port, or of the jetties, is S. S. E. and N. N. W.; but after having paſſed the bank on the ſtarboard quarter on entering, the port makes an elbow, and bears to the S. S. W. If a veſſel be obliged to enter into port without a pilot, and if the wind be ſtrong, ſhe muſt be ready to caſt anchor on the ſtarboard ſide as ſoon as ſhe has paſſed the bank which is at the entrance of the port, and laid the veſſel S. S. W.; for in caſe of not anchoring, ſhe would be carried away by the current to the mud-banks at the bottom of the port. Oſtend is very commodious for every ſhip under forty guns; but it keeps filling up every day, particularly ſince a dam has been thrown up to prevent the overflowing of Polder St. Catherine, which is nearly two thouſand five hundred acres of new well cultivated land. In this ſpace, lately overflowed by the tide, the fineſt baſin in the univerſe might be conſtructed, by forming a ſluice in the middle of the dam, made thirty years ago to oppoſe the inundation. The Oſtenders will be able to cleanſe and excavate their port as much as they pleaſe by means of the waters which they may dam up after flood in the Sandfort. In reſpect to the bank on the inſide of the jetties to ſtarboard on entering, it is eaſy to deſtroy it, by making an elbow upon the eaſtern jetty to change the direction of the drifts, by an angle of reflexion equal to the angle of incidence: the waters of the fine ſluice of Schlick, although very diſtant and badly placed, would be ſufficient to carry away the bank. If this ſluice had been placed nearer to the trading port, at the entrance of the canal of Bruges, its defence and its uſe would have been united; inſtead of which, it is of very little ſervice where it is towards cleanſing the port, and very difficult to protect from the attacks of an enemy. The town of Oſtend is ſmall, but very pretty; it rendered itſelf famous during the wars of the Low Countries. Oſtend takes its name from its ſituation; as it is at the extremity of Flanders, on the eaſtern ſide, it is called

Oſtend

Oſtend (Eaſt-end). Oſtend particularly ſignalized itſelf by the ſiege which it ſuſtained in 1601 againſt the archduke. This ſiege, which laſted three years, began in the month of July 1601; and the town did not capitulate until September 1604. There periſhed during the ſiege fifteen colonels, ſeven marſhals, five hundred and ſixty-five captains, eleven hundred and ſixty ſix lieutenants, three hundred and twenty-two enſigns, four thouſand nine hundred and eleven ſerjeants, nine thouſand one hundred and ſixty-ſix corporals, ſix hundred and ten anſpaſſades, fifty-four thouſand three hundred and ſixty-ſix ſoldiers, ſix thouſand and eleven ſailors, eleven hundred and ninety-ſix women and children; making in the whole ſeventy-eight thouſand perſons and upwards. Oſtend only began to be fortified in 1572. It was however a town known for ſeveral ages before; for it is ſeen in the grand Flanders Chronicle, that Robert de Friſe, eighteenth count of Flanders, died in 1093, after reigning twenty-two years, and built thirty churches, dedicated to St. Peter, the firſt of which was erected at Oſtend. The abridgment of the Flemiſh Chronicle ſpeaks alſo of Oſtend, in mentioning Philipes Elſaten, ſixteenth count of Flanders, who died in 1191, and who cauſed to be hung and expoſed along the coaſt, from Blankemberg to Oſtend, eighty Norman gentlemen, who had ſeized upon ſome ſhips belonging to the princeſs of Portugal his wife. In the time of Philipes Elſaten, there was taken on the coaſt near Oſtend a ſea-monſter, forty feet long, with eight large fins. Jaques Marchantiers, in his deſcription of Flanders, book I. page 79, ſays, in ſpeaking of this monſter, *Roſtro aquilino, criſtâ gladiata*; the expreſſion criſtâ gladiata, makes me conceive it to have been a kind of ſword-fiſh; perhaps it was a particular ſpecies.

After repairing my veſſel at Oſtend, and refreſhing my crew, I made diſpoſitions to continue my courſe to Breſt, the twelfth of September.

The thirteenth, at noon, the wind blew pretty freſh from the eaſt, the weather overcaſt, I left the port, keeping cloſe to the eaſtern jetty. When outſide the jetties we ſteered weſt, to paſs to the ſouth of the buoy, which is at the extremity of the bank before the port. After paſſing this buoy we bore W. N. W. and W. S. W., coaſting along ſhore, three quarters of a league diſtant, till we got oppoſite to Nieuport, which we rounded, keeping rather farther from ſhore. At four o'clock we directed our courſe ſouth, to avoid the point to the eaſt of Brac, and gain the entrance of the road of Dunkirk on the eaſtern ſide. When wide of the Brac on the eaſt, a veſſel is deſirous of nearing the land to gain the channel, the tower of St. Catherine ſhould be kept in line with the two towers of Bergues, keeping however thoſe of Bergues a little to the eaſt of that of St. Catherine, which is the only tower on the coaſt in this neighbourhood. Knowing by ſounding, or the increaſed depth of water, that we had paſſed the point eaſt of the Brae, and that we were in the channel at the entrance of the road, we ſteered N. W. and N. quarter W., under top-ſails, to look for our anchorage. At half paſt four o'clock we caſt anchor in ſeven fathoms water, with a bottom of muddy ſand, and we moored eaſt and weſt, the ſame bottom and ſame ſoundings. Being moored, the battery bore S. quarter S. W., and the tower of Dunkirk S. I ought not to forget to obſerve, that in going from Oſtend to Dunkirk there is a channel more ſecure and eaſy than that which we took, particularly for a veſſel like l'Hirondelle: a veſſel has need to coaſt the ſhore at no more than a quarter of a league diſtant, and take care in rounding the bank which is at the entrance of Nieuport. The road of Dunkirk is good, on account of there being but little water (ſix, ſeven, eight, and nine fathoms), and the ground holding well. This road would hold the largeſt fleet; it is ſhut only by a ſand-bank, called the Brac, on which at low water there is but one fathom water, and which in ſome places even is dry. The winds the moſt to be apprehended in this road are thoſe from

the W. N. W. to the N. E. The ſea there frequently runs very high, particularly when the wind blows from the W. N. W., on account of the ſurges entering by the weſtern paſſage. This is the moſt likely wind to make the anchors drive and break the cables, eſpecially in flowing tides, for then ſhips have at the ſame time to ſuſtain the power of the wind and the impulſe of the flood.

Dunkirk is celebrated for its antiquity, its port, and the revolutions it has undergone. About ſixty years before the Chriſtian æra, the people inhabiting the coaſts of the ſea where Dunkirk now is ſituated, were called Diabintes. This name, which is latinized, is derived from the German, in which language it is thus written: *Die hap inden*; ſignifying, navigating in a port of a ſecure form, or navigating in a port of the ſhape of a hatchet. The Morini were their neighbours, that is to ſay, the people of Boulogne, Calais, St. Omer, Therouane, and Aire; and thoſe of Bergues, Honſchoot, Furnes, Dixmude, and Nieuport, were called Menapii: theſe three people went to meet Cæſar on his conquering Gaul, and gave him battle on the banks of the Sambre: it remained for a long time undecided, and Cæſar gained it only by means of a conſiderable reinforcement which he had received during the engagement; notwithſtanding this his loſs was ſo great, that he was unable to ſubjugate theſe people until the following year, when he again fought with and defeated them. Cæſar conquering them, left them Corvinius for governor. The Romans conſtructed ſeveral fortreſſes, among others that of Caſſel, ſix leagues from Dunkirk inland, where the governor of the Low Countries uſed to reſide. The village of Mardyck, which has been made a good fortreſs, is ſituated a league and a half, or thereabouts, from Dunkirk; it has given the name to ſeveral camps and battles; it was formerly the celebrated Portus Iccius, of which Cæſar ſpeaks in his Commentaries, who has even retained the name; the Sieur Chifflet has drawn a plan of it, with an ample deſcription. He ſays, that in the time of Cæſar the greater part of this country was covered with wood, and overflowed in different parts, and that there were only ſome banks or roads raiſed above the marſhes, which led to the ſea-ſhore; the ſea then extended as far as to a town called Cithieu. This town was afterwards named St. Omer's, from the name of a biſhop of Therouane, who built a church and ſeveral houſes there for the reſidence of the poor of his dioceſe, and to enable them to live by the trade of the place. After his death, the relics of the ſaint being tranſported to Cithieu, his name was given to the church, and the town which was afterwards built.

St. Victricius, biſhop of Rouen, was the firſt who came to preach the Chriſtian religion on the coaſt of Dunkirk, in 396. The laſt of the Romans were driven out by Meroue, who ſubjugated this province to France, in 450. St. Eloi came to preach the faith in 646, and made ſome ſtay there, which brought over a number of proſelytes; he built a pretty large church there on the downs, where for ſome time a number of fiſhermen and poor people were collected together. This place was ſoon frequented by a number of the Chriſtians of the neighbourhood: the name of Dunkirk was given to this church, and to the town which was afterwards built on that ſpot; the word kerke ſignifying church in the Teutonic language, from which the Flemiſh is derived.

The Low Countries were governed for a long time by foreſters appointed by the kings of France. Baldwin, in 864, was foreſter of Flanders, or the Low Countries, having run away with and married Judith, daughter of Charles the Bald, who forgave him his conduct, and ſanctioned his marriage; he became the firſt count of Flanders, the king making this country a county reſerving a homage to France. The number of the inhabitants of Dunkirk augmenting every day, from the commodiouſneſs of its natural port, Baldwin III. ſurrounded it with a wall in 906, to protect the inhabitants from the inroads of

of banditti. They addicted themſelves to trade and fiſhing, and embelliſhed and added to the convenience of the port. Philip of Alſace built ſeveral veſſels of war there, to go with to the Holy Land. In 1170 the Norman pirates, for the moſt part gentlemen, interrupted their commerce, by ſtopping their veſſels in the channel; they detained and even plundered the Princeſs of Portugal, who was on her voyage to marry Count Philippes in Flanders. Philippes fitted out a ſtrong fleet at Dunkirk, which he ſent after them, and was fortunate enough to take them all and carry them into Dunkirk, where they were condemned to death, as I have before obſerved in ſpeaking of Oſtend. This defeat endeared the Dunkirkers to their ſovereign, who granted them many privileges and exemptions. In 1232 Dunkirk being ſold to Godfrey de Conde, biſhop of Cambray, on condition of reverting after his death to the count of Flanders, he very much enlarged and deepened the port, and conſtructed two jetties, proceeding a good diſtance out to ſea.

Dunkirk was ſeparated from the county of Flanders, and erected into a private lordſhip by Robert of Bethune, in favour of Robert of Caſſel his ſon, who built a caſtle, and eſtabliſhed a magiſtracy. He founded three brotherhoods of croſs-bow-men, bow-men, and gunners, to exerciſe the citizens, and perfect them in the uſe of arms: dying without a ſon, his only daughter Jolanda married a duke of Bar. This alliance gave its firſt arms to Dunkirk.

In 1382, the people of Ghent revolting from their ſovereign, called the Engliſh to their aſſiſtance, and ſeized upon the town of Dunkirk; but Charles VI., King of France, retook it the ſame year, and reſtored it to its lord.

In 1403, the walls and fortifications, damaged by the ſieges it had ſuſtained, were repaired, and the ditches greatly deepened.

In 1436, the Engliſh took Dunkirk.

In 1440, a church was built at the foot of the tower built a ſhort time before, to ſerve as a pharos and belfry for the pariſh.

Among many great men which this town has produced is Nicholas Vanderhelle, a great theologian, four times *recteur magnifique* of the univerſity of Louvain; Cornelius Schepper, a great philoſopher and politician, who under Francis I. was profeſſor of philoſophy and mathematics at Paris. He was choſen by Charles V. to watch over his intereſts with the major part of the princes of Europe, and was twice appointed ambaſſador to Sultan Solyman: he was greatly beloved by the learned.

The fiſhery being from earlieſt time the principal trade of the town, in 1532 five hundred buſſes or veſſels, from fifty to ſixty tons, deſigned for fiſhing in the north, belonged to this port: every one of theſe veſſels had among the lines with which they fiſhed, one called the holy line; all the fiſh caught by it were ſold for the benefit of the church: out of theſe gifts the church, which was burnt in 1558, was rebuilt in 1560.

In the war between France, Spain, and England, in 1558, marſhal Termes with ſeventeen thouſand men ſet down before Dunkirk: there were in garriſon in the place at the time no more than four hundred men; it was taken by aſſault and pillaged, and many of the citizens were maſſacred. Bergues ſuffered the ſame fate. The pillage in theſe towns and in the neighbourhood was ſo great, that a cow was ſold in the French camp for two or three ſous, and thirty-eight horned beaſts for a gold crown: the bells were even broken, in order to take away the pieces, the enemies of France having collected an army in the neighbourhood of St. Omer's, for the purpoſe of attacking the French. Marſhal Termes was diſpoſed to retreat, and ſet fire to ſeveral parts of the town, in order to complete the deſtruction of what had eſcaped the rage of the ſoldiery; the church, the convents, and almoſt the whole town, were conſumed by the flames, as well as

as ſeveral veſſels were laden with booty, which were detained by contrary winds in the port. After theſe exceſſes he departed to join the main army, but Count Egment, the general of the Spaniards, came up with fifteen thouſand troops, and a large number of peaſants, who cut to pieces the army of Marſhal Termes, making him with the chief of his ſtaff priſoners.

In 1583 the town of Dunkirk was taken by the confederates, and retaken the ſame year by the Duke of Parma, who greatly repaired the port, and built there ſeveral veſſels of war, among others, fourteen commanded by vice-admiral Wacken, which made many Dutch prizes; the following year, the proprietors of theſe veſſels made a number of prizes, which they conducted into port, notwithſtanding it was blockaded by a Dutch ſquadron. Charles Dauwere and his ſon John were the chiefs of theſe fleets of privateers; they were both of them intrepid, and very ſkilful in manœuvres. This cauſed the ſquadron of the Dutch, which had coſt a great deal for little advantage, to draw off. About this time the Spaniſh fleet arrived in the channel, named the *Invincible*, which was diſperſed by a ſtorm; many ſhips periſhed at ſea, others were loſt on the ſhores of France and England, and the ſad remains of this fleet were fortunately conducted back to Spain through the ſkill of Michael Jacobs, a Dunkirker, an excellent ſeaman; nevertheleſs the Dunkirkers did not ceaſe fitting out privateers, and making conſiderable prizes of Dutchmen and Zealanders. Theſe riches drew a number of foreign ſailors to Dunkirk. The ardour of the Dutch for blockading Dunkirk was redoubled, ſending even a hundred veſſels before it; which however did not hinder the privateers from ſtealing out under favour of night, and, owing to the lightneſs of their veſſels, proceeding in making prizes in the North Sea. They were attacked by a large ſhip of war, commanded by the Vice-admiral Anthoniſen, but who was not then on board. In his abſence, the commander ſeeing himſelf diſabled, half his crew wounded, and the enemy already boarding his ſhip, ſet fire to the powder-room, and blew himſelf up; at the ſame time doing conſiderable damage to the Dunkirkers. The town was fortified with new works, and privateering continued. In 1595, one captain of a privateer brought into the port of Dunkirk as many as thirty maſters of buſſes and other veſſels, which he was ſatisfied with ranſoming for more than two hundred thouſand livres; an enormous ſum for that age. Another, named Koſter, returning to Dunkirk after ranſoming ſeveral veſſels, was ſurrounded by a Dutch fleet; he fought deſperately, and diſabled ſeveral veſſels; at length, preſſed upon at all ſides, he ſet fire to the magazine, and blew himſelf up, together with the ſhips which were boarding him.

The Cardinal Archduke Albert of Auſtria, who replaced the Duke of Parma, being deſirous of ſignalizing his acceſſion to the government of the Low Countries, laid ſiege to Calais in 1596, which he carried in a little time; this acquiſition was of great advantage to cruizing againſt the enemy. The Dutch, intereſted in hindering, ſent fourteen large veſſels to anchor before Dunkirk, while nine others kept the ſea to intercept the veſſels deſirous of entering. Calais was given up to the French by the treaty concluded in 1598, between France and Spain; in ſpite of the Dutch ſquadron prizes arrived in ſafety, and the engagements which took place, were fought with ſo much the more obſtinacy from each party hanging their priſoners.

In 1609 a truce was concluded for twelve years between the Dutch and Spaniards. At the end of it the privateers, aſſiſted by nine Spaniſh veſſels, ruined the Dutch commerce.

In 1622 the citadel of Mardyck was conſtructed to ſhelter Dunkirk from the inſults of its enemies. In this year John Jacobſon of Dunkirk, a captain in the navy, commanding the St. Vincent of a hundred and fifty men, on going out of port with two

Spaniſh

Spaniſh veſſels commanded by Spaniards, was attacked about four hours after leaving the jettys, by nine Dutch men of war, which ſurrounded and engaged the St. Vincent; his two companions made their eſcape. Jacobſon maintained the unequal fight for thirteen hours, ſunk two of the veſſels, and did great damage to the others, but, reduced to two or three men, the reſt being either killed or wounded, he was boarded by fifty of the enemy, when he ſet fire to the magazine, and blew them up with himſelf: the exploſion was ſo violent, that one of the Dutch veſſels was diſmaſted, and another was in great danger from the falling of ſome heavy pieces of braſs cannon which had been blown up, and alighted on the deck; all the reſt were in a ſad plight. The enemy in this engagement loſt more than four hundred men. This loſs, far from diſpiriting the Dunkirkers, only inflamed them with a deſire to revenge their companions. The Sieurs Wandewalle, father and ſon, equipped eighteen veſſels, which, in conjunction with others, made more than ſix hundred prizes, of which ſix were veſſels of war of the largeſt ſize; from the prizes captured by four veſſels only of Wandewalle, the tenth, which belonged to the king of Spain, came to more than a hundred thouſand florins; and in ſpite of the blockade of the town, which the Dutch maintained continually, the cruizers ruined their fiſhery and their trade. In 1625 the profits of the privateering were eſtimated at more than 10,000,000 f. In 1629 the Dunkirkers made prize of ninety-one veſſels richly laden; without including ranſoms, and ſhips which they burnt in Norway and other places.

Matthew Rombout, a Dunkirker, vice-admiral of the Spaniards, fought Admiral Peter Hein; the latter loſt his life. He was much regretted by the Dutch. Tired at length with their continual loſſes, after depriving Admiral Drop of his commiſſion, who commanded before Dunkirk, they augmented their fleet to eighty ſail, in order to blockade the place entirely; but, getting too cloſe to Maerdyck, the cannon from the fortreſs played on them with ſo well directed a fire, they were fain to retire, after ſuſtaining conſiderable damage.

War being declared in 1635 between France and Spain, the Dunkirkers made prize of fourteen French ſhips at once, laden with wine; and ſome days after, Captain Nordman captured eleven others. Admiral Colaert, a Dunkirkman, commanding ſeventeen veſſels of war, burnt more than a hundred and fifty Dutch buſſes, convoyed by a ſquadron; the admiral's ſhip itſelf was deſtroyed, and the vice-admiral was carried priſoner to Dunkirk. One of the moſt conſiderable prizes was that of the famous French pirate Loutre; ſhe mounted eighteen guns, had made prize of ſeventeen veſſels, which had been ſunk after taking out their moſt precious effects; there was on board this veſſel ſeventeen thouſand florins, ſix thouſand piaſtres, one hundred and twenty-two pounds of ſilver in ingots, a coffer full of ſilver plate, and a great quantity of precious ſtones.

In 1636 the ſame Colaert took and conducted to Dunkirk the Dutch admiral Haute Been, or Wooden-leg. This Colaert was in the Spaniſh ſervice for thirty-ſix years, took from the enemy one hundred and nine veſſels, and twenty-ſeven ſhips of war, bearing collectively more than one thouſand five hundred pieces of cannon; he died at Dunkirk in 1637. The great number of priſoners brought into the town cauſed a plague, by which numbers of perſons periſhed. The owners of privateers made fortunes notwithſtanding Van Tromp commanded the blockade of the port. In 1640 the circumference of the lower town was enlarged, in order to furniſh dwellings for the increaſed number of inhabitants; ſo greatly did the equipments from the place attract population.

It was in 641 that Don Pedro de Leon, governor of Dunkirk, obliged Vice-admiral Matthew Rombout to go out of port with his ſquadron to aſſiſt the Spaniards againſt

the Portugueſe, who had revolted. This governor, a general officer on ſhore, knew nothing of the difficulty of paſſing through the enemy's fleet, ſuperior in number, which laid between Gravelines and the town. He would not liſten to the repreſentations of Rombout, who, forced to obey, was defeated as he had predicted, and killed in the engagement after having fought with the greateſt reſolution. A part of his ſquadron was taken, the other was obliged to fly. His death gave as much concern to the Spaniards, as pleaſure to the Dutch, who feared him greatly. A deſcendant in a direct line of this Admiral Rombout went two voyages with me as a pilot.

In 1642 Joſeph Pieters, vice admiral, being with five veſſels and a long-boat in the roads of Vivaros in Spain was attacked at eleven o'clock in the morning by twenty-four French veſſels and eight galleys; the French admiral's ſhip, carrying ſixty-ſix guns, was ſo ill treated that he was obliged to withdraw. The battle laſted till night, during which the Dunkirk man made ſhift to eſcape with his ſix veſſels.

In 1645 the French attacked the fort of Mardyck, which capitulated after ſix weeks ſiege. But the governor of Dunkirk having aſſembled all the ſeamen and ſome troops, took it again during a winter's night. It was taken again by the French in 1646, after a ſiege of twenty-one days. That of Dunkirk immediately ſucceeded; the Prince of Condé made himſelf maſter of it in leſs than a month, notwithſtanding it was vigorouſly defended by the Marquis de Lede, who was obliged to capitulate, all ſuccour being cut off both by ſea and land. He ſurrendered with military honours.

In 1652, during the civil wars of France, the Archduke Leopold retook it, and gave the government of it to the Marquis de Lede, who had before ſo well defended it.

In 1656 the Engliſh, united with French and Dutch, made war with Spain. The Dunkirkers, joined to thoſe of Oſtend, took a whole fleet of Engliſh ſhips, conſiſting of forty-four ſail, and a few days after thirty-three others.

In 1657 Marſhal Turenne, with ſome Engliſh troops, took the fort of Mardyck. He gave it up to the Engliſh, who ſent there a fleet laden with a quantity of materials to fortify and render it in ſome meaſure impregnable. They put fifteen hundred men in garriſon in it.

In 1658 Marſhal Turenne inveſted Dunkirk, the king joined him with a powerful army. The Spaniards, under the conduct of Don John of Auſtria and the Prince of Condé, endeavoured to throw ſuccours into the place, but they loſt the battle of the Downs; and the Marquis de Lede dying of the wounds which he received, the garriſon capitulated on the twenty-fifth of June, after ſix weeks ſiege. The next day the Spaniſh garriſon went. The king entered it the ſame day in the morning, and in the afternoon gave up the place to the Engliſh, on condition of ſuffering the town to enjoy all its privileges; thus in leſs than a day it ſaw itſelf ſucceſſively under the domination of three crowns. The privateers of Dunkirk and Oſtend had taken during the war more than two thouſand five hundred veſſels. The Engliſh cauſed a ſtrong citadel to be conſtructed, inſtead of Fort Leon, and greatly ſtrengthened the town; which was ſold to the French in 1662 for the ſum of five millions of livres, through the negotiation of the Comte D'Eſtrades. The king made his entry into it the ſecond of December, maintained its privileges, and made it a free port. In 1665 new fortifications were conſtructed, and the citadel improved. In 1680 the foundations of the Fort Riſbau, Fort Verd, and Fort de Bonne Eſperance were laid, which were perfected, and projected far out to ſea. The king often came to ſee the works, which laſted from ten to eleven years. The baſon was conſtructed in 1686.

In 1688 France was at war with the Dutch, the Engliſh, and the Spaniards, during which the Dunkirkers fitted out a number of privateers. In 1689 M. Bart, ordered to

eſcort a fleet of fourteen merchant veſſels to Havre, went on board a frigate of twenty-eight guns, and with M. Forbin under his orders of ſixteen guns, they met with two Engliſh ſhips of forty-eight and forty-two guns, and fought them ſufficiently long to give time to the convoy to purſue its courſe; but, both wounded, one hundred and forty men diſabled, and their veſſels complete wrecks, they were taken. The loſs of the Engliſh veſſels was ſo great, that the command of their veſſels devolved to a boat-ſwain's mate, all the officers being killed in the engagement. The two French captains eſcaped from priſon ſome time afterwards. The firſt fitted out a veſſel and made many prizes. He entirely deſtroyed the fiſhery of the Dutch, and made a deſcent in England near Newcaſtle, with ſeven frigates, burnt there two hundred houſes, and carried back booty to Dunkirk of the value of fifty thouſand livres. Some days after he ſailed again with three frigates, cruiſed in the North, where he took a Dutch fleet, eſcorted by three veſſels of war, fought the latter, took one, and put the other two to flight, after having greatly damaged them. He came back to Dunkirk with the whole fleet, laden with wheat, barley, iron, pitch, &c.

France having purchaſed a large quantity of wheat in the north in 1694, M. Bart was ordered to go and convoy the fleet, conſiſting of a hundred and odd ſail of veſſels. This fleet ſailed under eſcort of three Swediſh and Daniſh ſhips, and was taken near the Texel on the twenty-eighth of June, by the commodore Hidde Vries, commanding a ſquadron of eight ſhips of war; but the twenty-ninth of June, M. Bart falling in with it, attacked the Dutch with ſo much bravery, that in leſs than half an hour the commodore was taken, commanding a veſſel of fifty-eight guns, another of fifty, and a third of thirty-ſix were captured, as well as the five others much ſhattered, which betook themſelves to flight and eſcaped. He retook the whole fleet; he conducted to Dunkirk the three veſſels and thirty of the merchantmen, the reſt made for their deſtination in different ports of France. The commodore died of his wounds ſhortly after his arrival. This ſervice rendered to France at a time of extraordinary ſcarcity of wheat corn, engaged his majeſty to ennoble M. Bart, who had been honoured with the croſs of St. Louis, ſome time before for other exploits.

The eleventh of Auguſt 1695, the enemy with one hundred and fourteen ſail under the orders of Admiral Barclay, attempted to bombard the town, they ſent in ſeveral fire-ſhips loaded with combuſtibles for burning the forts and jettys; but they were driven back by the well ſuſtained fire of the forts, and by the vigilance of M. Derlingue, who commanded in the harbour, and went out with ſeveral boats to grapple the fire-ſhips, launched againſt the forts and jettys, and conduct them to ſtations where they might burn out, without doing any injury. M. Bart commanded at Fort Eſperance, M. de St. Claire at Chateau Verd. The enemy threw more than one thouſand two hundred bombs, and a number of carcaſſes between eight o'clock in the morning and ſeven in the evening without doing any damage: ten bombs fell in the Riſban, they killed an officer there; another bomb which fell in Fort Verd, did no more than dig its grave; one of the enemy's frigates having grounded on a bank at low water, M. Derlingue went with his boats to it, and made priſoners of its crew, in ſpite of the firing of the enemy. This expedition was expenſive to the enemy without profit. The preceding year they made a ſimilar attempt.

In 1696, M. Bart ſailed from Dunkirk, and took a Dutch fleet in the north, of one hundred and ſix ſail; ſixty-one of which he ranſomed, after carrying by boarding five veſſels of war, which convoyed the fleet. He was made Chef d'Eſcadre in 1697; and ſailed the fifth of September, with ſix veſſels and a frigate to tranſport the Prince de Conti to Poland, notwithſtanding an enemy's ſquadron ſuperior in number, which

could not cut him off, he arrived at Dantzig the twenty-ſixth, and brought this prince back again to Dunkirk, November the eleventh following; circumſtances not having anſwered the hopes which the Poles had made this prince conceive. While this was happening, the peace of Ryſwick was made; during this war the privateers of Dunkirk had made prizes of the collective value of twenty-two million of livres.

In 1701 war broke out afreſh; Fort Blanc was conſtructed. M. Bart being ordered to fit out a ſquadron, applied himſelf to it with ſuch activity, that a pleuriſy carried him to the grave, the twenty-ſeventh of April 1702, aged fifty-two years, and generally regretted. His ſon Andrew followed the ſteps of his father; he diſtinguiſhed himſelf under M. de St. Pol, who commanded a ſquadron in the north, and under M. de Forbin, who ſucceeded M. de St. Pol, he being killed in 1705, in an engagement in which his ſquadron had the advantage. M. Bart by his ſervices, reached the rank of vice-admiral.

In 1712, peace being concluded, the ſluices, forts, and fortifications of Dunkirk were demoliſhed. During this war the Dunkirkers brought in one thouſand ſix hundred prizes; which ſold for more than thirty millions of livres, excluſive of veſſels carried into other ports of France.

In 1714, the canal and port of Mardyck were dug, to carry off the waters of the country; this port is half a league from Dunkirk to the weſt, beſide the ancient Mardyck. Two ſluices were made to admit ſhips, but in 1717 the largeſt was deſtroyed, and only the ſmaller one of ſixteen feet was preſerved for letting off the water. By this canal, which ended at Dunkirk, commerce was carried on, but at a heavy expence, in ſpite of the Engliſh. A dam had been thrown acroſs the port, between the town and citadel, but a furious wind having driven the ſea with violence againſt it, it gave way ſhortly before 1720, and was entirely carried away. Navigation was began upon it, and forts and jettys, in faſcinage, were conſtructed on it in 1744, and the town was ſurrounded with a rampart of turf; but the forts were demoliſhed at the peace of 1748. After this peace, a dyke was made to carry off the water from the ditches of the town, which had become ſtagnant. The laſt war the ſluice of Bergues was re-eſtabliſhed, and the baſin, and forts in faſcinage were conſtructed cloſe to the ſea; but at the peace the forts were demoliſhed, the baſin, and the dyke, leaving the ſluice of Bergues for carrying off the water.

The twenty-fourth of September, at nine in the morning, having two-thirds of flood-tide, the wind weak from the ſouth, I ſailed from the road of Dunkirk to return to Breſt, by the channel. We ſteered at firſt W. quarter N. W. and W. N. W., to get out of the road which terminates E. and W., with the points of Brac. A veſſel is known to be weſt of Brac, when the belfry de petite Sainte is in a line with the buoy of Mardyck, as well that it is eaſt of Brac, when the belfry of St. Catherine is in a line with the towers of Bergues. After going out of the roads by the paſſage of the weſt, and about to make for the Straits of Dover; you muſt ſteer W. N. W. and N. W. quarter W. to avoid the Snow, a bank which is dry, and which muſt be left to larboard; you muſt neither ſteer more N. than N. W. quarter W. for fear of falling in with the Breban, on which there is but three feet of water, in certain parts at low water; but no riſk is run in ſteering W. N. W. and N. W. quarter W. You know that you are clear, that is to ſay, weſt of the banks, when you have the tower of St. George, which is flat, in a line with a ſmall down, which looks like an iſland, or when the great tower of Gravelines bears S. quarter S. W. of the compaſs. At noon on the twenty-fourth, I was in that poſition, light wind; but having the ebb for me I made way. The tides are twelve hours long at Dunkirk, eleven and half at Calais, and three in the middle of the

ſtrait. From noon to ſix o'clock I bore weſt, all ſails ſet, the wind S. E. weak. At ſix o'clock I made Cape Grines, bearing S. 4° W. three leagues diſtant, and the caſtle of Dover bearing N. N. W. four leagues diſtant; whence I took my departure, ſteering W. quarter S. W. and W. S. W.

The twenty-fifth, at day break, I was five leagues from the Engliſh coaſt, and by log I ought to have been eight leagues; the flood-tide, which we had from ſeven o'clock till midnight, had doubtleſs carried us to the north. At noon Beachy-head, on the coaſt of England, bore north by the compaſs, diſtant four leagues and a half, I obſerved the variation 19° 52′. From noon till two o'clock we had a weak S. S. W. wind; I ſteered weſt; at two o'clock the wind getting round to the W., and the tide ebbing, I ſteered S. S. W. At ſix o'clock Beachy-head bore N. N. E. eight leagues diſtant. At ſeven o'clock, being high water, and perfectly calm, I anchored a ſmall anchor in twenty-ſix fathoms water, bottom gravel and broken ſhells. I then caſt the log, which ſhewed me the tide ran three knots. At eleven o'clock the wind blowing S. S. W. I ſailed, ſteering weſt.

The twenty-ſixth at noon, I made Cape Barfleur, which bore S. W. quarter W., ſeven leagues diſtant. I took the altitude, and found myſelf in latitude 50° 0′, longitude 0° 18′ W. of Paris. From noon to five o'clock a weak S. wind. I ſteered W. quarter N. W. with all ſails ſet. At five o'clock, being the beginning of flood, I caſt the ſtream anchor in thirty-ſeven fathoms, bottom ſmall pebbles and ſhells. Being at anchor, cape La Hogue bore S. S. W. 5°. W. ſix leagues diſtant. The tide ran five knots at half paſt ſeven.

At eight o'clock, my anchor breaking at the middle of the ſhank, I ſet all ſails; at the ſame time coiling all my towing ropes. I ſteered W. quarter N. W. to ſtem the current; at ten o'clock I ſteered W. N. W. and N. W. quarter W. not to get near the Caſkets; at midnight perceiving diſtinctly the fires of the Caſkets, I ſteered W. N. W.; at four o'clock I made a tack to the W. S. W., and at ſeven o'clock the wind being S. E., I ſteered S. W. to make the coaſt of Brittany. The twenty-ſeventh at noon, I was in latitude 49° 30′ and longitude 6° 3′. The ſame day at ſun-riſe I found the variation 19° 45′. From noon till four o'clock I ſteered S. W. The wind freſh from the S. E. At four o'clock perceiving land, which by the tack I was upon I kept from, I ſtood cloſer in order to make it before night. At ſix o'clock the largeſt of the ſeven iſlands bearing S. S. E. four leagues diſtant, I ſteered W. and kept all night under eaſy ſail.

The twenty-eighth at five o'clock in the morning, I kept cloſe to ſhore. At ſeven o'clock I laid N. and S. of Abrevrack. I continued running along the coaſt, and at nine o'clock I got into Le Four, where, meeting with contrary winds, I luffed till eleven o'clock, when the flood obliged me to caſt a ſmall anchor in twenty-ſix fathoms water, gravelly bottom, a league to the S. S. W. of a rock called le Four. I ſailed at five o'clock in the afternoon, but night obliged me to anchor at the Blanc Sablon.

The twenty-ninth, at ſeven in the morning, weak and variable winds from the ſouth ſide, I ſailed and paſſed by favour of the current againſt the wind, the great and little eVinotiere. I anchored in Breſt roads at ſix in the evening, and the next day my veſſel entered into port to be diſarmed.

THE VOYAGE OF THE RIGHT HONOURABLE GEORGE EARL OF CUMBERLAND TO THE AZORES, ETC. WRITTEN BY THE EXCELLENT MATHEMATICIAN AND ENGINEER MASTER EDWARD WRIGHT.*

[HAKLUYT, II. 155. Second Part.]

THE Right Honourable the Earl of Cumberland having at his own charges prepared his ſmall fleet of four ſails only, viz. the Victory, one of the Queen's ſhips royal; the Meg and Margaret, ſmall ſhips, (one of which alſo he was forced ſoon after to ſend home again, finding her not able to endure the ſea,) and a ſmall caravel; and having aſſembled together about four hundred men (or fewer) of gentlemen, ſoldiers, and ſailors; embarked himſelf and them, and ſet ſail from the Sound of Plymouth in Devonſhire, the eighteenth day of June 1589, being accompanied with theſe captains and gentlemen which hereafter follow:

Captain Chriſtopher Liſter, a man of great reſolution, captain Edward Careleſs, alias Wright, who in Sir Francis Drake's Weſt Indian voyage to St. Domingo and Carthagena was captain of the Hope; captain Boſwell, M. Mervin, M. Henry Long, M. Partridge, M. Norton, M. William Mounſon, captain of the Meg, and his vice-admiral, now Sir William Mounſon, M. Pigeon, captain of the caravel.

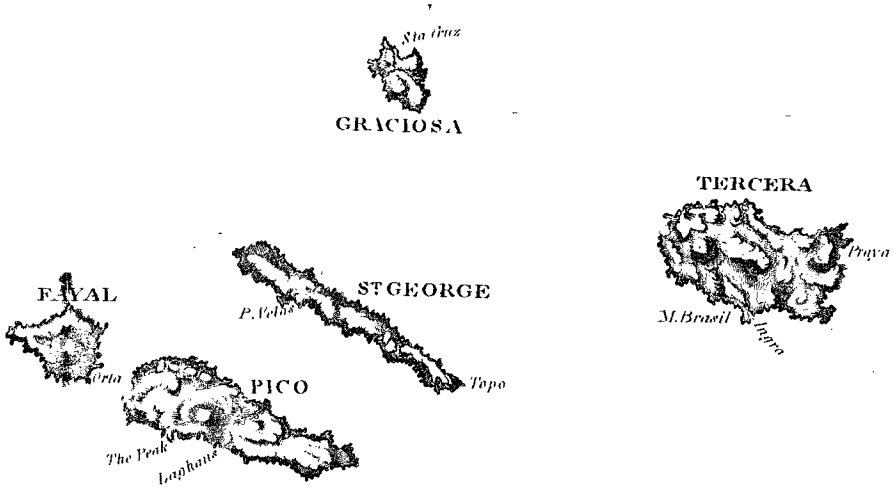
About three days after our departure from Plymouth we met with three French ſhips, whereof one was of Newhaven, another of St. Malo's and ſo finding them to be leaguers and lawful prizes we took them, and ſent two of them for England, with all their loading, which was fiſh for the moſt part from Newfoundland, ſaving that there was part thereof diſtributed amongſt our ſmall fleet, as we could find ſtowage for the ſame; and in the third all their men were ſent home into France. The ſame day and the day following we met with ſome other ſhips, whom (when, after ſome conference had with them, we perceived plainly to be of Rotterdam and Embden, bound for Rochelle) we diſmiſſed.

The twenty-eight and twenty-ninth days we met divers of our Engliſh ſhips, returning from the Portugal voyage, which my Lord relieved with victuals. The thirteenth day of July, being Sunday, in the morning, we eſpied eleven ſhips without ſight of the coaſt of Spain, in the height of 39°, whom we preſently prepared for, and provided to meet them, having firſt ſet forth captain Mounſon in the Meg, before us, to deſcry whence they were. The Meg approaching near, there paſſed ſome ſhot betwixt them, whereby, as alſo by their admiral and vice-admiral putting forth their flags, we perceived that ſome fight was likely to follow. Having therefore fitted ourſelves for them, we made what haſte we could towards them, with regard always to get the wind of them, and about ten or eleven of the clock we came up to them with the Victory. But, after ſome few ſhot and ſome little fight paſſed betwixt us, they yielded themſelves, and the maſters of them all came aboard us, ſhewing their ſeveral paſſports from the cities of Hamburg and Lubeck, from Bremen, Pomerania, and Calice.

They had in them certain bags of pepper and cinnamon, which they confeſſed to be the goods of a Jew in Liſbon, which ſhould have been carried by them into their country to his factor there; and ſo finding it by their own confeſſion to be lawful prize, the ſame was ſoon after taken and divided amongſt our whole company, the value whereof was eſteemed to be about four thouſand five hundred pounds, at two ſhillings the pound.

* Theſe iſles properly belong to Europe, as lying nearer Portugal than any other country. See Pinkerton's Modern Geog. vol. i. p. 601.

The



33 Longitude West from Greenwich. 32

The ſeventeenth day the foreſaid ſhips were diſmiſſed, but ſeven of their men that were willing to go along with us for ſailors, we took to help us, and ſo held on our courſe for the Azores.

The firſt of Auguſt, being Friday, in the morning, we had ſight of the iſland of St. Michael, being one of the eaſtermoſt of the Azores, towards which we ſailed all that day, and at night having put forth a Spaniſh flag in our main-top, that ſo they might the leſs ſuſpect us, we approached near to the chief town and road of that iſland, where we eſpied three ſhips riding at anchor and ſome other veſſels: all which we determined to take in the dark of the night, and accordingly attempted about ten or eleven of the clock, ſending our boats well manned to cut their cables and hawſers, and let them drive into the ſea. Our men coming to them found that one of thoſe greateſt ſhips was the Falcon of London, being there under a Scottiſh pilot, who bore the name of her as his own. But three other ſmall ſhips that lay near under the caſtle there, our men let looſe, and towed them away unto us, moſt of the Spaniards that were in them leaping overboard, and ſwimming to ſhore with loud and lamentable outcries; which they of the town hearing were in an uproar, and anſwered with the like crying. The caſtle diſcharged ſome great ſhot at our boats, but ſhooting without mark by reaſon of the darkneſs, they did us no hurt. The Scots likewiſe diſcharged three great pieces into the air to make the Spaniards think they were their friends and our enemies, and ſhortly after the Scottiſh maſter, and ſome other with him, came aboard to my Lord, doing their duty, and offering their ſervice, &c. Theſe three ſhips were fraught with wine and ſallad-oil from Sivil.

The ſame day our caravel chaſed a Spaniſh caravel to ſhore at St. Michael, which carried letters thither, by which we learned, that the caraks were departed from Tercera eight days before.

The ſeventh of Auguſt we had ſight of a little ſhip, which we chaſed towards Tercera with our pinnace (the weather being calm), and towards evening we overtook her; there were in her thirty tons of good Madeira wine, certain woollen cloth, ſilk, taffeta, &c. The fourteenth of Auguſt we came to the iſland of Flores, where we determined to take in ſome freſh water and freſh victuals, ſuch as the iſland did afford. So we manned our boats with ſome a hundred and twenty men, and rowed towards the ſhore; whereto when we approached, the inhabitants that were aſſembled at the landing-place put forth a flag of truce, whereupon we alſo did the like.

When we came to them, my Lord gave them to underſtand by his Portugal interpreter, that he was a friend to their king Don Antonio, and came not any way to injure them, but that he meant only to have ſome freſh water and freſh victuals of them, by way of exchange for ſome proviſion that he had, as oil, wine, or pepper, to which they preſently agreed willingly, and ſent ſome of their company for beeves and ſheep, and we in the mean ſeaſon marched ſouthward about a mile to Villa de Santa Cruz, from whence all the inhabitants young and old were departed, and not any thing of value left. We demanding of them what was the cauſe hereof, they anſwered, fear; as their uſual manner was when any ſhips came near their coaſt.

We found that part of the iſland to be full of great rocky barren hills and mountains, little inhabited, by reaſon that it is moleſted with ſhips of war, which might partly appear by this town of Santa Cruz, (being one of their chief towns,) which was all ruinous, and (as it were) but the relicks of the ancient town, which had been burned about two years before by certain Engliſh ſhips of war, as the inhabitants there reported.

At evening as we were rowing towards the Victory, a huge fiſh purſued us for the ſpace well nigh of two miles together, diſtant for the moſt part from the boat's ſtern

not a ſpear's length, and ſometimes ſo near that the boat ſtruck upon him, the tips of whoſe fins about the gills (appearing oftimes above the the water) were, by eſtimation, four or five yards aſunder, and his jaws gaping a yard and a half wide, which put us in fear of overturning the pinnace, but, God be thanked (rowing as hard as we could) we eſcaped.

When we were about Flores, a little ſhip, called the Drake, brought us word that the caraks were at Tercera, of which news we were very glad, and ſped us thitherward with all the haſte we could; and by the way we came to Fayal Road the ſeven and twentieth day of Auguſt, after ſunſet, where we eſpied certain ſhips riding at anchor, to whom we ſent in our ſkiff, with captain Liſter and captain Mounſon, in her, to diſcover the roaders: and, leſt any danger ſhould happen to our boat, we ſent in likewiſe the Sawſie-Jack and the ſmall caravel; but the wind being off the ſhore, the ſhips were not able to fet it ſo nigh as the Spaniards ride, which nevertheleſs the boat did, and clapped a ſhip aboard, of two hundred and fifty tons, which carried in her fourteen caſt pieces, and continued to fight alone with her for the ſpace of one hour, until the coming up of other boats to the reſcue of her, which were ſent from the ſhips, and then afreſh boarding her again, one boat in the quarter, another in the hawſe, we entered her on the one ſide, and all the Spaniards leaped overboard on the other, ſave Juan de Palma the captain of her and two or three more, and thus we became poſſeſſors of her. This ſhip was moored to the caſtle, which ſhot at us all this while: the only hurt which we received of all this ſhot was this, that the maſter of our caravel had the calf of his leg ſhot away. This ſhip was laden with ſugar, ginger, and hides, lately come from St. Juan de Puerto-Rico; after we had towed her clear off the caſtle, we rowed in again with our boats, and fetched out five ſmall ſhips more; one laden with hides, another with elephants' teeth, grains, cocoa-nuts, and goats' ſkins, come from Guinea, another with woad, and two with dog-fiſh; which two laſt we let drive in the ſea, making none account of them. The other we ſent for England the thirtieth of Auguſt.

At the taking of theſe prizes were conſorted with us ſome other ſmall men of war, as maſter John Davis, with his ſhip, pinnace, and boat, captain Markeſbury with his ſhip, whoſe owner was Sir Walter Raleigh, the bark of Lime, which was alſo conſorted with us before.

The laſt of Auguſt, in the morning, we came in ſight of Tercera, being about ſome nine or ten leagues from ſhore, where we eſpied coming towards us a ſmall boat under ſail, which ſeemed ſomewhat ſtrange unto us, being ſo far from land, and no ſhip in ſight, to which they might belong: but coming near, they put us out of doubt, ſhewing they were Engliſhmen (eight in number) that had lately been priſoners in Tercera, and, finding an opportunity to eſcape at that time, with that ſmall boat, committed themſelves to the ſea, under God's providence, having no other yard for their main-ſail but two pipe ſtaves tied together by the ends, and no more proviſion of victuals than they could bring in their pockets and boſoms. Having taken them all into the Victory, they gave us certain intelligence, that the caracks were departed from thence about a week before.

Thus, being without any further hope of thoſe caraks, we reſolved to return for Fayal, with intent to ſurpriſe the town; but until the ninth of September, we had either the wind ſo contrary, or the weather ſo calm, that in all that time, we made ſcarce nine or ten leagues' way, lingering up and down not far from Pico.

The tenth of September, being Wedneſday, in the afternoon, we came again to Fayal Road. Whereupon immediately my Lord ſent captain Liſter, with one of Gracioſa, (whom captain Mounſon had before taken,) and ſome others, towards Fayal, whom certain

ſam of the inhabitants met in a boat, and came with captain Liſter to my Lord, to whom he gave his choice: either to ſuffer him quietly to enter into the platform there without reſiſtance, where he and his company would remain a ſpace without offering any injury to them, that they (the inhabitants) might come unto him, and compound for the ranſom of the town: or elſe to ſtand to the hazard of war.

With theſe words they returned to the town; but the keepers of the platform anſwered, that it was againſt their oath and allegiance to king Philip to give over without fight. Whereupon my Lord commanded the boats of every ſhip, to be preſently manned, and ſoon after landed his men on the ſandy ſhore, under the ſide of an hill, about half a league to the northward from the platform: upon the top of which hill certain horſemen and footmen ſhewed themſelves, and other two companies alſo appeared, with enſigns diſplayed, the one before the town upon the ſhore by the ſea-ſide, which marched towards our landing-place, as though they would encounter us; the other in a valley to the ſouthwards of the platform, as if they would have come to help the townſmen: during which time, they in the platform alſo played upon us with great ordnance. Notwithſtanding, my Lord (having ſet his men in order) marched along the ſea-ſhore, upon the ſands, betwixt the ſea and the town towards the platform for the ſpace of a mile or more, and then the ſhore growing rocky, and permitting no further progreſs without much difficulty, he entered into the town, and paſſed through the ſtreet without reſiſtance, unto the platform; for thoſe companies before mentioned, at my Lord's approaching, were ſoon diſperſed, and ſuddenly vaniſhed.

Likewiſe they of the platform, being all fled at my Lord's coming thither, left him and his company to ſcale the walls, to enter and take poſſeſſion without reſiſtance.

In the mean time our ſhips ceaſed not to batter the foreſaid town and platform with great ſhot, till ſuch time as we ſaw the red-croſs of England flouriſhing upon the forefront thereof.

This Fayal is the principal town in all that iſland, and is ſituate directly over againſt the high and mighty mountain Pico, lying towards the W. N. W., from that mountain, being divided therefrom by a narrow ſea, which at that place is by eſtimation about ſome two or three leagues in breadth, between the iſles of Fayal and Pico.

The town contained ſome three hundred houſeholds; their houſes were fair and ſtrongly builded of lime and ſtone, and double covered with hollow tiles much like our roof-tiles, but that they are leſs at the one end than at the other.

Every houſe almoſt had a ciſtern or well in a garden on the back-ſide: in which gardens grew vines (with ripe cluſters of grapes,) making pleaſant ſhadows, and tobacco, now commonly known and uſed in England, wherewith their women there dye their faces reddiſh to make them ſeem freſh and young: pepper, Indian and common; fig-trees bearing both white and red figs: peach-trees not growing very tall: oranges, lemons, quinces, potatoe roots, &c. Sweet wood (cedar, I think,) is there very common even for building and firing.

My Lord, having poſſeſſed himſelf of the town and platform, and being careful of the preſervation of the town, gave commandment, that no mariner nor ſoldier ſhould enter into any houſe to make any ſpoil thereof. But eſpecially he was careful that the churches and houſes of religion there ſhould be kept inviolate, which was accordingly performed through his appointment of guarders and keepers for thoſe places: but the reſt of the town, either for want of the former inhibition, or for deſire of ſpoil and prey, was rifled and ranſacked by the ſoldiers and mariners, who ſcarcely left any houſe unſearched, out of which they took ſuch things as liked them, as cheſts of ſweet wood, chairs, cloth, coverlets, hangings, bedding, apparel: and further ranged into the country, where

ſome

ſome of them alſo were hurt by the inhabitants. The friary there containing and maintaining thirty Franciſcan friars (among whom we could not find any one able to ſpeak true Latin,) was builded by a friar of Angra in Tercera of the ſame order, about the year of our Lord 1506. The tables in the hall had ſeats for the one ſide only, and were always covered, as ready at all times for dinner or ſupper.

From Wedneſday in the afternoon, at which time we entered the town, till Saturday night, we continued there, until the inhabitants had agreed and paid for the ranſom of the town two thouſand ducats, moſt part whereof was church-plate.

We found in the platform eight-and-fifty iron pieces of ordnance, whereof three-and-twenty (as I remember), or more, were ready mounted upon their carriages, between barricadoes, upon a platform towards the ſea-ſide; all which ordnance we took, and ſet the platform on fire, and ſo departed: my Lord having invited to dinner in the Victory, on the Sunday following, ſo many of the inhabitants as would willingly come (ſave only Diego Gomes the governor, who came but once only to parley about the ranſom); only four came, and were well entertained, and ſolemnly diſmiſſed with ſound of drum and trumpets, and a peal of ordnance: to whom my Lord delivered his letter, ſubſcribed with his own hand, importing a requeſt to all other Engliſhmen to abſtain from any further moleſting them, ſave only for freſh water and victuals neceſſary for their intended voyage. During our abode here (viz. the eleventh of September) two men came out of Pico, which had been priſoners there: alſo at Fayal we ſet at liberty a priſoner tranſlated from St. Jago, who was couſin to a ſervant of Don Anthonio King of Portugal, in England: theſe priſoners we detained with us.

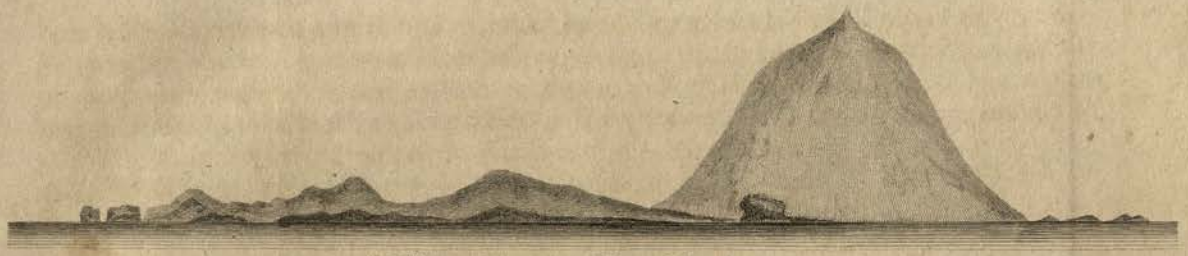
On Monday we ſent our boats aſhore for freſh water, which (by reaſon of the rain that fell the former night,) came plentifully running down the hills and would otherwiſe have been hard to be gotten there. On Tueſday likewiſe, having not yet ſufficiently ſerved our turns, we ſent again for freſh water, which was then not ſo eaſy to be gotten as the day before, by reaſon of a great wind; which in the afternoon increaſed alſo in ſuch ſort, that we thought it not ſafe to ride ſo near the land; whereupon we weighed anchor, and ſo departed N. W. and by W., along the coaſt of Fayal iſland. Some of the inhabitants coming aboard to us this day, told us, that always about that time of the year ſuch winds W. S. W. blew on that coaſt.

This day, as we ſailed near St. George's Iſland, a huge fiſh lying ſtill a little under water, or rather even therewith, appeared hard by a-head of us; the ſea breaking upon his back, which was black coloured, in ſuch ſort as deeming at the firſt it had been a rock, and the ſhip ſtemming directly with him, we were put in a ſudden fear for the time: till ſoon after we ſaw him move out of the way.

The ſixteenth of September, in the night, it lightened much, whereupon there followed great winds and rain, which continued the ſeventeenth, eighteenth, nineteeth, twentieth, and twenty-firſt of the ſame. The twenty-third of September we came again into Fayal-road to weigh an anchor, which (for haſte and fear of foul weather we had left there before, where we went on ſhore to ſee the town, the people (as we thought) having now ſettled themſelves there again: but notwithſtanding many of them through too much diſtruſtfulneſs, departed and prepared to depart with their packets at the firſt ſight of us; until ſuch time as they were aſſured by my Lord, that our coming was not any way to injure them, but eſpecially to have freſh water, and ſome other things needful for us, contenting them for the ſame.

So then we viewed the town quietly, and bought ſuch things as we deſired for our money, as if we had been in England. And they helped to fill us in freſh water, receiving for their pains ſuch ſatisfaction as contented them.

The



S.W. View of the Island Pico of the Azores.

Strait between Fayal and Pico from the S.

City of Angra, Mount Brasil &c. from the S.

M. Brasil from S.E.

N.W. Point of St. Michel.

Ile St. Mary.

E. Point of S. Michel.

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The twenty-fifth day we were forced again to depart from thence before we had ſufficiently watered, by reaſon of a great tempeſt that ſuddenly aroſe in the night, inſomuch, that my lord himſelf, ſoon after midnight, raiſed our men out of their cabins to weigh anchor, himſelf alſo together with them hauling at the capſten, and after cheering them up with wine.

The next day we ſent our caravel and the Sawſie-Jack to the road of St. Michael, to ſee what they could eſpy: we following after them upon the twenty-ſeventh day, plying to and fro, came within ſight of St. Michael, but by contrary winds, the twenty-eight, twenty-ninth, and thirtieth days we were driven to leeward, and could not get near the iſland.

The firſt of October we ſailed alongſt Tercera, and even againſt Brazil (a promontory near to Angra, the ſtrongeſt town in that iſland) we eſpied ſome boats coming to the town, and made out towards them; but being near to land, they ran to ſhore and eſcaped us.

In the afternoon we came near to Gracioſa, whereupon my lord forthwith ſent captain Liſter to the iſlanders, to let them underſtand that his deſire was only to have water and wine of them, and ſome freſh victuals, and not any further to trouble them. They anſwered they could give no reſolute anſwer to this demand, until the governors of the iſland had conſulted thereupon, and therefore deſired him to ſend again to them the next day.

Upon the ſecond day, early in the morning, we ſent forth our long boat and pinnace, with empty caſks, and about ſome 50 or 60 men, together with the Margaret, and captain Davis his ſhip; for we now wanted all the reſt of our conſorts. Juſt when our men would have landed, the iſlanders ſhot at them, and would not ſuffer them. And troops of men appeared upon land, with enſigns diſplayed to reſiſt us: ſo our boats rowed alongſt the ſhore to find ſome place where they might land, not with too much diſadvantage; our ſhips and they ſtill ſhooting at the iſlanders: but no place could be found where they might land without great peril of loſing many of their lives; and ſo were conſtrained to retire without receiving any anſwer, as was promiſed the day before. We had three men hurt in this conflict, whilſt our boats were together in conſulting what was beſt to be done: two of them were ſtruck with a great ſhot; (which the iſlanders drew from place to place with oxen) wherewith the one loſt his hand, and the other his life within two or three days after: the third was ſhot into his neck with a ſmall ſhot, without any great hurt.

With theſe news our company returned back again at night, whereupon preparation was made to go to them again the next day; but the day was far ſpent before we could come near them with our ſhip: neither could we find any good ground to anchor in, where we might lye to batter the town, and further we could find no landing place, without great danger to loſe many men; which might turn not only to the overthrow of our voyage, but alſo put the queen's ſhip in great peril for want of men to bring her home. Therefore my lord thought it beſt to write to them to this effect: that he could not a little marvel at the inhumanity and cruelty which they had ſhewed towards his men, ſeeing they were ſent by him unto them in peaceable manner, to receive their anſwer, which they had promiſed to give the day before: and that were it not for Don Antonio, their lawful king, his ſake, he could not put up ſo great injury at their hands, without juſt revengement upon them: notwithſtanding for Don Antonio his ſake, whoſe friend he was, he was yet content to ſend to them once again for their anſwer: at night captain Liſter returned with this anſwer from them; that their gunner ſhot off one of their pieces, which was charged with powder only, and

was ſtopped; which our men, thinking it had been ſhot at them, ſhot again, and ſo began the fight: and that the next morning they would ſend my lord a reſolute anſwer to his demand, for as yet they could not know their governors' mind herein. The next morning there came unto us a boat from the ſhore with a flag of truce, wherein were three of the chief men of the iſland, who agreed with my lord that he ſhould have of them 60 butts of wine, and freſh victuals to refreſh himſelf and his company withal: but as for freſh water they could not ſatisfy our need therein, having themſelves little or none, ſaving ſuch as they ſaved in veſſels or ciſterns when it rained, and that they had rather give us two tuns of wine than one of water; but they requeſted that our ſoldiers might not come on ſhore, for they themſelves would bring all they had promiſed to the water-ſide, which requeſt was granted, we keeping one of them aboard with us until their promiſe was performed, and the others we ſent to ſhore with our empty caſks, and ſome of our men to help to fill, and bring them away with ſuch other proviſion as was promiſed: ſo the Margaret, captain Davis his ſhip, and another of Weymouth, ſtaid riding at anchor before the town, to take in our proviſion. This ſhip of Weymouth came to us the day before, and had taken a rich prize, (as it was reported) worth ſixteen thouſand pounds, which brought us news that the Weſt Indian fleet was not yet come, but would come very ſhortly. But we with the Victory put off to ſea, and upon Saturday the fourth, we took a French ſhip of St. Malo, (a city of the unholy league) laden with fiſh from Newfoundland; which had been in ſo great a tempeſt, that ſhe was conſtrained to cut her mainmaſt overboard for her ſafety, and was now coming to Graciosa to repair herſelf. But ſo hardly it befel her, that ſhe did not only not repair her former loſſes, but loſt all that remained unto us. The chief of her men we took into our own ſhip, and ſent ſome of our men, mariners and ſoldiers, into her to bring her into England.

Upon the Sunday following at night, all our promiſed proviſion was brought unto us from Graciosa; and we friendly diſmiſſed the iſlanders with a peal of ordnance.

Upon Monday, Tueſday, and Wedneſday, we plyed to and fro about theſe iſlands, being very rough weather. And upon Thurſday at night, being driven ſome three or four leagues from Tercera, we ſaw 15 ſail of the Weſt Indian fleet coming into the haven at Angra in Tercera. But the wind was ſuch that for the ſpace of four days after, though we lay as cloſe by the wind as poſſible, yet we could not come near them. In this time we loſt our late French prize, not being able to lie ſo near the wind as we, and heard no more of her till we came to England, where ſhe ſafely arrived. Upon Monday we came very near the haven's mouth, being minded to have run in amongſt them, and to have fetched out ſome of them if it had been poſſible: but in the end this enterprize was deemed too dangerous, conſidering the ſtrength of the place where they rode, being haled and towed in nearer the town, at the firſt ſight of our approaching, and lying under the protection of the caſtle of Brazil on the one ſide, (having in it five-and twenty pieces of ordnance) and a fort on the other ſide, wherein were thirteen or fourteen great braſs pieces. Beſides, when we came near land, the wind proved too ſcant for us to attempt any ſuch enterprize.

Upon Tueſday the fourteenth, we ſent our boat to the road to ſound the depth, to ſee if there were any anchoring place for us, where we might lie without ſhot of the caſtle and fort, and within ſhot of ſome of thoſe ſhips, that we might either make them come out to us, or ſink them where they lay. Our boat returned, having found out ſuch a place as we deſired, but the wind would not ſuffer us to come near it, and again if we could have anchored there, it was thought likely that they would rather run themſelves

ſelves a-ground to ſave their lives and liberties, and ſome of their goods, than come forth to loſe their liberties and their goods to us their enemies. So we ſhot at them to ſee if we could reach them, but it fell far ſhort. And thus we departed, thinking it not probable that they would come forth ſo long as we watched them before the haven's mouth, or within ſight of them. For the ſpace of five days after we put off to ſea, and lay without ſight of them; and ſent a pinnace to lie out of ſight cloſe by the ſhore, to bring us word if they ſhould come forth. After a while the pinnace returned and told us, that thoſe ſhips in the haven had taken down their ſails, and let down their top-maſts: ſo that we ſuppoſed they would never come forth, till they perceived us to be quite gone.

Wherefore, upon the twentieth, hearing that there were certain Scottiſh ſhips at St. Michael, we ſailed thither, and found there one Scottiſh roader, and two or three more at Villa Franca, the next road, a league or two from the town of St. Michael, to the eaſtwards: of whom we had for our relief ſome ſmall quantity of wine (viz. ſome five or ſix butts of them all) and ſome freſh water, but nothing ſufficient to ſerve our turn.

Upon Tueſday the one-and-twentieth, we ſent our long-boat to ſhore for freſh water at a brook, a little to weſtwards from Villa Franca.

But the inhabitants eſpying us, came down with two enſigns diſplayed, and about ſome hundred-and-fifty men armed, to withſtand our landing. So our men having ſpent all their powder upon them in attempting to land, and not being able to prevail at ſo great odds, returned fruſtrate.

From hence we departed towards St. Mary's Iſland, minding to water there, and then to go for the coaſt of Spain. For we had intelligence that it was a place of no great force, and that we might water there very well: therefore, upon Friday following, my lord ſent captain Liſter, and captain Amias Preſton, now ſir Amias Preſton (who not long before came to us out of his own ſhip, and ſhe loſing us in the night, he was forced to tarry ſtill with us) with our long-boat and pinnace, and ſome ſixty or ſeventy ſhot in them, with a friendly letter to the iſlanders, that they would grant us leave to water, and we would no further trouble them.

So we departed from the Victory for the iſland, about nine of the cloek in the fore-noon, and rowed freſhly until about three o'clock afternoon. At which time our men being ſomewhat weary of rowing, and being within a league or two of the ſhore, and four or five leagues from the Victory, they eſpied (to their refreſhing) two ſhips riding at anchor, hard under the town, whereupon, having ſhifted ſome ſix or ſeven of our men into captain Davis his boat, being too much peſtered in our own, and detaining with us ſome twenty ſhot in the pinnace, we made way towards them with all the ſpeed we could.

By the way as we rowed, we ſaw boats paſſing betwen the roaders and the ſhore, and men in their ſhirts ſwimming and wading to ſhore, who, as we perceived afterwards, were labouring to ſet thoſe ſhips faſt on ground, and the inhabitants as buſily preparing themſelves for the defence of thoſe roaders, their iſland, and themſelves. When we came near them, captain Liſter commanded the trumpets to be ſounded, but prohibited any ſhot to be diſcharged at them, until they had direction from him: but ſome of the company, either not well perceiving or regarding what he ſaid, immediately upon the ſound of the trumpets diſcharged their pieces at the iſlanders, which, for the moſt part, lay in trenches and fortified places, unſeen to their own beſt advantage: who immediately ſhot likewiſe at us, both with ſmall and great ſhot, without danger to themſelves: notwithſtanding, captain Liſter earneſtly haſtened forward the ſailors

that rowed, who began to ſhrink at that ſhot flying ſo faſt about their ears, and himſelf firſt entering one of the ſhips that lay a little farther from the ſhore than the other, we ſpeedily followed after him into her, ſtill plying them with our ſhot. And having cut in ſunder her cables and hawſers, towed her away with our pinnace. In the mean time captain Davis his boat overtook us, and entered into the other ſhip, which alſo (as the former) was forſaken by all her men: but they were conſtrained to leave her, and to come again into their boat (whilſt ſhot and ſtones, from ſhore, flew faſt among them) finding her to ſtick ſo faſt a-ground that they could not ſtir her; which the townſmen alſo perceiving, and ſeeing that they were but few in number, and us (buſied about the other ſhip) not coming to aid them, were preparing to have come and taken them. But they returned unto us, and ſo, together, we came away towards the Victory, towing after us the prize that we had now taken, which was lately come from Brazil, laden with ſugar.

In this fight we had two men ſlain, and ſixteen wounded: and as for them, it is like they had little hurt, lying, for the moſt part, behind ſtone walls, which were builded one above another hard by the ſea ſide, upon the end of the hill, whereupon the town ſtood betwixt two vallies. Upon the top of the hill lay their great ordinance (ſuch as they had) wherewith they ſhot leaden bullets, whereof one pierced through our prize's ſide, and lay ſtill in the ſhip without doing any more harm.

The next day we went again to the ſame iſland, but not knowing before the inconvenience and diſadvantage of the place where we attempted to land, we returned fruſtrate.

The ſame night, the twenty-fifth, we departed for St. George's Iſland for freſh water, whither we came on Monday following October twenty-ſeven; and having eſpied where a ſpout of water came running down, the pinnace and long-boat were preſently manned, and ſent under the conduct of captain Preſton, and captain Munſon, by whom my lord ſent a letter to the iſlanders as before, to grant us leave to water only, and we would no further trouble them: notwithſtanding, our men coming on ſhore, found ſome of the poor iſlanders, which for fear of us, hid themſelves amongſt the rocks.

And on Wedneſday following, our boats returned with freſh water, whereof they brought only ſix tuns for the Victory, alledging they could get no more, thinking (as it was ſuppoſed) that my lord having no more proviſion of water and wine, but only 12 tuns, would not go for the coaſt of Spain, but ſtraight for the coaſt of England, as many of our men greatly deſired: notwithſtanding my lord was unwilling ſo to do, and was minded the next day to have taken in more water: but through roughneſs of the ſeas and wind, and unwillingneſs of his men, it was not done. Yet his honour purpoſed not to return with ſo much proviſion unſpent, and his voyage (as he thought) not yet performed in ſuch ſort, as might give ſome reaſonable contentment or ſatisfaction to himſelf and others.

Therefore, becauſe no more water could now conveniently be gotten, and being uncertain when it would be gotten, and the time of our ſtaying aboard alſo uncertain, the matter being referred to the choice of the whole company, whether they would tarry longer till we might be more ſufficiently provided of freſh water, or go by the coaſt of Spain for England, with half ſo much allowance of drink as before, they willingly agreed that every meſs ſhould be allowed at one meal, but half ſo much drink as they were accuſtomed, (except them that were ſick and wounded) and ſo to go for England, taking the coaſt of Spain in our way, to ſee if we could that way make up our voyage.

Upon

Upon Saturday thirty-firſt, we ſent the Margeret (becauſe ſhe leaked much) directly for England, together with the prize of Brazil which we took at St. Mary, and in them ſome of our hurt and wounded men, or otherwiſe ſick, were ſent home as they deſired, for England: but captain Monſon was taken out of the Megg into the Victory.

So we held on our courſe for the coaſt of Spain, with a fair wind and a large, which before we ſeldom had. And upon Tueſday following, being the fourth of November, we eſpied a ſail right before us, which we chaſed till about three o'clock in the afternoon, at which time, we overtaking her, ſhe ſtruck ſail, and being demanded who was her owner, and from whence ſhe was, they anſwered, a Portugal, and from Pernanbuck in Brazil. She was a ſhip of ſome hundred and ten tons burden, freighted with four hundred and ten cheſts of ſugar, and fifty kintals of Brazil-wood; every kintal containing one hundred pound weight: we took her in latitude nine-and-twenty degrees, and about two hundred leagues from Liſbon, weſtwards: Captain Preſton was preſently ſent unto her, who brought the principal of her men aboard the Victory, and certain of our men, mariners, and ſoldiers were ſent aboard her. The Portugals of this prize told us that they ſaw another ſhip before them that day, about noon. Having therefore diſpatched all things about the prize aforeſaid, and left our long-boat with captain Davis, taking his leſſer boat with us, we made way after this other ſhip with all the ſails we could bear, holding on our courſe due E., and giving order to captain Davis his ſhip and the prize, that they ſhould follow us due E, and that if they had ſight of us the morning following, they ſhould follow us, if not, they ſhould go for England.

The next morning we eſpied not the ſail which we chaſed, and captain Davis his ſhip and the prize were behind us out of ſight: but the next Thurſday, the ſixth, (being in latitude 38° 30', and about 60 leagues from Liſbon, weſtwards) early in the morning captain Preſton deſcried a ſail, ſome two or three leagues a head of us, after which, we preſently haſtened our chaſe, and overtook her about eight or nine of the clock before noon. She came lately from St. Michael's road, having been before at Brazil, laden with ſugar and brazile. Having ſent our boat to bring ſome of the chief of their men aboard the Victory; in the mean time, whilſt they were in coming to us, one out of the main top eſpied another ſail a head, ſome three or four leagues from us.

So, immediately upon the return of our boat, having ſent her back again with ſome of our men aboard the prize, we purſued ſpeedily this new chace, with all the ſails we could pack on, and about two o'clock in the afternoon overtook her: ſhe had made proviſion to fight with us, having hanged the ſides of the ſhip ſo thick with hides (wherewith eſpecially ſhe was laden) that muſket ſhot would not have pierced them: but when we had diſcharged two great pieces of our ordnance at her, ſhe ſtruck ſail, and approaching nearer, we aſking of whence they were, they anſwered from the Eaſt Indies, from Mexico, and St. Joan de Lowe (truly called Ulkua). This ſhip was of ſome three or four hundred tons, and had in her ſeven hundred hides, worth ten ſhillings a piece: ſix cheſts of cochineal, every cheſt holding one hundred pound weight, and every pound worth ſix and twenty ſhillings and eight pence, and certain cheſts of ſugar and China diſhes, with ſome plate and ſilver.

The captain of her was an Italian, and by his behaviour ſeemed to be a grave, wiſe, and civil man; he had put in adventure in this ſhip, five and twenty thouſand ducats. We took him with certain other of her chiefeſt men (which were Spaniards) into the Victory; and captain Liſter with ſo many other of the chiefeſt of our mariners, ſoldiers, and ſailors as were thought ſufficient, to the number of twenty or thereabouts, were ſent into her. In the mean time (we ſtaying) our prizes which followed after, came up to us.

us. And now we had our hands full, and with joy ſhaped our courſe for England, for ſo it was thought meeteſt, having now ſo many Portugals, Spaniards, and Frenchmen amongſt us, that if we ſhould have taken any more prizes afterwards, we had not been well able to have manned them without endangering ourſelves. So about ſix of the clock in the afternoon (when our other prize had overtaken us) we ſet ſail for England. But our prizes not being able to bear us company without ſparing them many of our ſails, which cauſed our ſhip to roll and wallow, that it was not only very troubleſome to us, but, as it was thought, would alſo have put the main maſt in danger of falling overboard: having acquainted them with theſe inconveniences, we gave them direction to keep their courſes together, following us, and ſo to come to Portſmouth. We took this laſt prize in the latitude of 39°, and about 46 leagues to the weſtwards from the Rock.

She was one of thoſe 16 ſhips which we ſaw going into the haven at Angra in Tercera, October eighth. Some of the men that we took out of her told us, that whilſt we were plying up and down before that haven, as before was ſhewed, expecting the coming forth of thoſe ſhips, three of the greateſt and beſt of them, at the appointment of the governor of Tercera, were unladen of their treaſure and merchandiſe, and in every of them were put three hundred ſoldiers, which were appointed to have come to lay the Victory aboard in the night, and take her; but when this ſhould have been done, the Victory was gone out of their ſight.

Now we went merrily before the wind with all the ſails we could bear, inſomuch, that in the ſpace of twenty-four hours, we ſailed near 47 leagues, that is ſeven ſcore Engliſh miles, betwixt Friday at noon and Saturday at noon, (notwithſtanding the ſhip was very foul, and much grown with long being at ſea) which cauſed ſome of our company to make accompt they would ſee what running at tilt there ſhould be at Whitehall upon the queen's day. Others were imagining what a Chriſtmas they would keep in England with their ſhares of the prizes we had taken. But ſo it befel, that we kept a cold Chriſtmas with the Biſhop and his Clerks (rocks that lye to the weſtwards from Sylly, and the weſtern parts of England): for ſoon after the wind ſcanting came about to the eaſtwards (the worſt part of the heavens for us from which the wind could blow) in ſuch ſort, that we could not fetch any part of England. And hereupon alſo our allowance of drink, which was ſcant enough before, was yet more ſcanted, becauſe of the ſcarcity thereof in the ſhip. So that now a man was allowed but half a pint at a meal, and that many times cold water, and ſcarce ſweet. Notwithſtanding this was a happy ſtate in compariſon of that which followed; for from half a pint we came to a quarter, and that laſted not long neither; ſo that by reaſon of this great ſcarcity of drink, and contrariety of wind, we thought to put into Ireland, there to relieve our wants. But when we came near thither, lying at Hull all night, (tarrying for the daylight of the next morning, whereby we might the ſafelyer bring our ſhip into ſome convenient harbour there) we were driven ſo far to leeward that we could fetch no part of Ireland, ſo as with heavy hearts and ſad cheer, we were conſtrained to return back again, and expect till it ſhould pleaſe God to ſend us a fair wind either for England or Ireland. In the mean time we were allowed every man three or four ſpoonsfull of vinegar to drink at a meal; for other drink we had none, ſaving only at two or three meals, when we had inſtead hereof as much wine, which was wringed out of wine-lees that remained. With this hard fare (for by reaſon of our great want of drink we durſt eat but very little) we continued for the ſpace of a fortnight or thereabouts; ſaving that now and then we feaſted for it in the mean time; and that was when there fell any hail or rain; the hail-ſtones we gathered up,

and

and did eat them more pleaſantly than if they had been the ſweeteſt comfits in the world; the rain-drops were ſo carefully ſaved, that ſo near as we could, not one was loſt in all our ſhip. Some hanged up ſheets tyed with cords by the four corners, and a weight in the midſt that the water might run down thither, and ſo be received into ſome veſſel ſet or hanged underneath; ſome that wanted ſheets, hanged up napkins and clouts, and watched them till they were thorough wet, then wringing and ſucking out the water. And that water which fell down and waſhed the filth and ſoiling of the ſhip, trod under foot, as bad as running down the kennel many times when it raineth, was not loſt I warrant you, but watched and attended carefully (yea ſometimes with ſtrife and contention) at every ſcupper hole, and other place where it ran down, with diſhes, pots, cans, and jars, whereof ſome drank hearty draughts even as it was, mud and all, without tarrying to cleanſe or ſettle it: others cleanſed it firſt, but not often, for it was ſo thick and went ſo ſlowly through, that they might ill endure to tarry ſo long, and were loth to looſe too much of ſuch precious ſtuff; ſome licked with their tongues (like dogs) the boards under feet, the ſides, rails, and maſts of the ſhip; others that were more ingenious, faſtened girdles or ropes about the maſts, dawbing tallow betwixt them and the maſt, (that the rain might not run down between) in ſuch ſort, that thoſe ropes or girdles hanging lower on the one ſide than on the other, a ſpout of leather was faſtened to the lower part of them, that all the rain drops that came running down the maſt, might meet together at that place, and there be received.

He that got a can of water by theſe means, was ſpoken of, ſued to, and envied as a rich man, "*Quàm pulchrum digito monſtrari et dicier hic eſt?*" Some of the poor Spaniards that we had taken (who notwithſtanding had the ſame allowance that our own men had) would come and crave of us, for the love of God, but ſo much water as they could hold in the hollow of their hand; and they had it notwithſtanding our great extremity, to teach them ſome humanity, inſtead of their accuſtomed barbarity, both to us and other nations heretofore. They put alſo bullets of lead into their mouths to ſlake their thirſt.

Now in every corner of the ſhip were heard the lamentable cries of ſick and wounded men, ſounding woefully in our ears, crying out and pitifully complaining for want of drink, being ready to die, yea many dying for lack thereof; ſo as by reaſon of this great extremity, we loſt many more men, than we had done all the voyage before; having before this time been ſo well and ſufficiently provided for, that we lived in a manner as well and healthfully, and died as few as if we had been in England, whereas now lightly every day ſome were caſt overboard.

But the ſecond day of December, 1589, was a feſtival day with us, for then it rained a good pace, and we ſaved ſome pretty ſtore of rain water (though we were well wet for it, and that at midnight) and filled our ſkins full beſides; notwithſtanding it were muddy and bitter with waſhing the ſhip, but, (with ſome ſugar which we had to ſweeten it withal) it went merrily down, yet remembered we and wiſhed for with all our hearts, many a conduit, pump, ſpring, and ſtream of clear ſweet running water in England: and how miſerable we had accounted ſome poor ſouls whom we had ſeen driven for thirſt to drink thereof, and how happy we would now have thought ourſelves if we might have had our fills of the ſame; yet ſhould we have fared the better with this our poor feaſting, if we might have had our meat and drink (ſuch and ſo much as it was) ſtand quietly before us: but beſides all the former extremities, we were ſo toſſed and turmoiled with ſuch horrible ſtormy and tempeſtuous weather, that every man had beſt hold faſt his can, cup, and diſh in his hands, yea and himſelf too, many times by the ropes, rails, or ſide, of the ſhip, or elſe he ſhould ſoon find all under feet.

Herewith

Herewith our main ſail was tore from the yard, and blown overboard quite away into the ſea, without recovery, and our other ſails ſo rent and torn (from ſide to ſide, ſome of them) that hardly any of them eſcaped whole. The raging waves and foaming ſurges of the ſea, came rolling like mountains one after another, and overraked the waſte of the ſhip like a mighty river running over it, whereas in fair weather it was near twenty feet above the water, that now we might cry out with the princely prophet, Pſalm 107, v. xxvi. "They mount up to heaven, and deſcend to the deep, ſo that their ſoul melteth away for trouble: they reel to and fro, and ſtagger like a drunken man, and all their cunning is gone." With this extremity of foul weather, the ſhip was ſo toſſed and ſhaken, that by the cracking noiſe it made, and by the leaking which was now much more than ordinary, we were in great fear it would have ſhaken in ſunder, ſo that now alſo we had juſt cauſe to pray a little otherwiſe than the poet, though marring the verſe, yet mending the meaning.

Deus maris et cæli, quid enim niſi vota ſuperſunt
Solvere, quaſſatæ parcito membra ratis.

Notwithſtanding it pleaſed God, of his great goodneſs, to deliver us out of this danger. Then forthwith a new main ſail was made and faſtened to the yard, and the reſt repaired as time and place would ſuffer, which we had no ſooner done, but yet again we were troubled with as great extremity as before, ſo that again we were like to have loſt our new main ſail, had not maſter William Antony, the maſter of the ſhip, himſelf, (when none elſe would or durſt) ventured, with danger of drowning, by creeping along upon the main yard (which was let down cloſe to the rails) to gather it up out of the ſea, and to faſten it thereto, being in the mean while oft-times ducked over head and ears into the ſea.

Theſe ſtorms were ſo terrible, that there were ſome in our company, which confeſſed that they had gone to ſea for the ſpace of twenty years, and had never ſeen the like, and vowed that if ever they returned ſafe home, they would never come to ſea again.

The laſt of November at night, we met with an Engliſh ſhip, out of which (becauſe it was too late at night) it was agreed that we ſhould have had the next morning, two or three tons of wine, which, as they ſaid, was all the proviſion of drink they had, ſave only a butt or two which they muſt needs reſerve for their own uſe; but after that, we heard of them no more, till they were ſet upon ground on the coaſt of Ireland, where it appeared that they might have ſpared us much more than they pretended they could, ſo as they might well have relieved our great neceſſities, and have had ſufficient for themſelves beſides, to bring them into England.

The firſt of December at night, we ſpake with another Engliſh ſhip, and had ſome beer out of her, but not ſufficient to carry us into England, ſo that we were conſtrained to put into Ireland, the wind ſo ſerving.

The next day we came to an anchor, not far from the St. Kelmes, under the land and wind, where we were ſomewhat more quiet, but (that being no ſafe harbour to ride in) the next morning we went about to weigh anchor, but having ſome of our men hurt at the capſten, we were fain to give over, and leave it behind, holding on our courſe to Ventre haven, where we ſafely arrived the ſame day, that place being a very ſafe and convenient harbour for us, that now we might ſing, as we had juſt cauſe, "they that go down to the ſea, &c."

So ſoon as we had anchored here, my lord went forthwith to ſhore, and brought freſh water, and freſh victuals, as muttons, pigs, hens, &c. to refreſh his company withal. Notwithſtanding himſelf had lately been very weak, and taſted of the ſame extremity that his company did; for in the time of our former want, having a little freſh water left him remaining in a pot, in the night it was broken, and the water drunk and dried up. Soon after the ſick and wounded men were carried to the next principal town, called Dingenacuſh, being about three miles diſtant from the foreſaid haven, where our ſhip rode, to the eaſtward, that there they might be the better refreſhed, and had the chirurgiens daily to attend upon them. Here we well refreſhed ourſelves, whilſt the Iriſh harp ſounded ſweetly in our ears, and here we, who for the former extremities were in a manner half dead, had our lives (as it were) reſtored unto us again.

This Dingenacuſh is the chief town in all that part of Ireland, it conſiſteth but of one main ſtreet, from whence ſome ſmaller do proceed on either ſide. It hath had gates (as it ſeemeth) at either end, to open and ſhut as a town of war, and a caſtle alſo. The houſes are very ſtrongly built with thick ſtone walls, and narrow windows like unto caſtles: for as they confeſſed, in time of trouble, by reaſon of the wild Iriſh, or otherwiſe, they uſed their houſes for their defence, as caſtles. The caſtle, and all the houſes in the town, ſave four, were won, burned, and ruinated by the earl of Deſmond. Theſe four houſes fortified themſelves againſt him, and withſtood him and all his power perforce, ſo as he could not win them.

There remaineth yet a thick ſtone wall that paſſeth overthwart the midſt of the ſtreet, which was a part of their fortification. Notwithſtanding whilſt they thus defended themſelves, as ſome of them yet alive confeſſed, they were driven to as great extremities as the Jews, beſieged by Titus, the Roman emperor, inſomuch that they were conſtrained to eat dead men's carcaſes for hunger. The town is now again ſomewhat repaired, but in effect there remain but the ruins of the former town. Commonly they have no chimnies in their houſes, excepting them of the better ſort, ſo that the ſmoak was very troubleſome to us, while we continued there. Their fuel is turfs, which they have very good, and whins or furs. There groweth little wood thereabouts, which maketh building chargeable there: as alſo want of lime (as they reported) which they are fain to fetch from far, when they have need thereof. But of ſtones there is ſtore enough, ſo that with them they commonly make their hedges to part each man's ground from other; and the ground ſeemeth to be nothing elſe within but rocks and ſtones; yet it is very fruitful and plentiful of graſs, and grain, as may appear by the abundance of kine and cattle there: inſomuch that we had good muttons (though ſomewhat leſs than ours in England) for two ſhillings or five groats a piece, good pigs and hens for three-pence a piece.

The greateſt want is induſtrious, painful, and huſbandly inhabitants, to till and trim the ground; for the common ſort, if they can provide ſufficient to ſerve from hand to mouth, take no further care.

Of money (as it ſeemeth) there is very ſmall ſtore amongſt them, which perhaps was the cauſe that made them double and treble the prices of many things we bought of them, more than they were before our coming thither.

Good land was here to be had for four-pence the acre, yearly rent. There are mines of allum, tin, braſs, and iron. Stones we ſaw there as clear as cryſtal, naturally ſquared like diamonds.

That part of the country is all full of great mountains and hills, from whence came running down the pleaſant ſtreams of ſweet freſh running water. The natural hard-

neſs of that nation appeared in this, that their ſmall children run uſually in the midſt of winter up and down the ſtreets bare-footed and bare-legged, with no other apparel (many times) ſave only a mantle to cover their nakedneſs.

The chief officer of their town, they call their ſovereign, who hath the ſame office and authority among them that our mayors have with us in England, and hath his ſerjeants to attend upon him, and bear the mace before him as our mayors.

We were firſt entertained at the ſovereign's houſe, which was one of thoſe four that withſtood the earl of Deſmond in his rebellion. They have the ſame form of common prayer word for word, in Latin, that we have here in England. Upon the ſunday the ſovereign cometh into the church with his ſerjeant before him, and the ſheriff and others of the town accompany him, and there they kneel down every man by himſelf privately to make his prayers. After this they riſe and go out of the church again to drink, which being done, they return again into the church, and then the miniſter beginneth prayers.

Their manner of baptizing differeth ſomething from ours: part of the ſervice belonging thereto, is repeated in Latin, and part in Iriſh. The miniſter taketh the child in his hands, and firſt dippeth it backwards, and then forwards, over head and ears into the cold water, in the midſt of winter, whereby alſo may appear their natural hardneſs, (as before was ſpecified). They had neither bell, drum, nor trumpet, to call the pariſhioners together, but they expect till their ſovereign come, and then they that have any devotion follow him.

They make their bread all in cakes, and for the tenth part, the bakers bake for all the town.

We had of them ſome ten or eleven tons of beer for the Victory, but it proved like a preſent purgation to them that took it, ſo that we choſe rather to drink water than it.

The twentieth of December we looſed from hence, having well provided ourſelves of freſh water, and other things neceſſary; being accompanied with Sir Edw. Dennie, his lady, and two young ſons.

This day in the morning, my lord going aſhore to diſpatch away ſpeedily ſome freſh water, that remained for the Victory, the wind being very fair for us, brought us news that there were ſixty Spaniſh prizes taken and brought to England. For two or three days we had a fair wind, but afterwards it ſcanted ſo, that (as I ſaid before) we were fain to keep a cold Chriſtmas with the biſhop and his clerks.

After this we met with an Engliſh ſhip, that brought us joyful news of ninety-one Spaniſh prizes, that were come to England, and ſorrowful news withal, that the laſt and beſt prize we took, had ſuffered ſhipwreck at a place upon the coaſt of Cornwall, which the Corniſh men call Als Efferne, that is Hell-cliff, and that captain Liſter, and all the men in the ſhip were drowned, ſave five or ſix, the one half Engliſh, the other Spaniſh, that ſaved themſelves with ſwimming; but notwithſtanding much of the goods were ſaved, and reſerved for us, by ſir Francis Godolphin, and the worſhipful gentlemen of the country there. My lord was very ſorry for captain Liſter's death, wiſhing that he had loſt his voyage to have ſaved his life.

The twenty-ninth we met with another ſhip that told us the ſame news, and that ſir Martin Frobiſher, and captain Reymond had taken the admiral and vice-admiral of the fleet that we eſpied going to Tercera haven. But the admiral was ſunk with much leaking, near to the Idy Stone, a rock that lieth over againſt Plymouth ſound, and the men were ſaved.

This ſhip alſo certified us that captain Preſton's ſhip had taken a prize laden with ſilver. My lord entered preſently into this ſhip, and went to Falmouth, and we held on our courſe for Plymouth. At night we came near to the Ram-head (the next cape weſtwards from Plymouth ſound) but we were afraid to double it in the night, miſdoubting the ſcantneſs of the wind. So we ſtood off to ſea half the night, and towards the morning had the wind more large, and made too little ſpare thereof, that partly for this cauſe, and partly through miſtaking of the land, we were driven ſo much to leewards, that we could not double that cape: therefore we returned back again, and came into Falmouth haven, where we ſtruck on ground, in ſeventeen feet water: but it was a low ebb, and ready again to flow, and the ground ſoft, ſo as no hurt was done. Here with gladneſs we ſet foot again upon the Engliſh ground, (long deſired) and refreſhed ourſelves with keeping part of Chriſtmas upon our native ſoil.

A VOYAGE TO THE AZORES WITH TWO PINNACES, THE ONE CALLED THE SERPENT, AND THE OTHER, THE MARY SPARKE OF PLYMOUTH, BOTH OF THEM BELONGING TO SIR WALTER RALEIGH; WRITTEN BY JOHN EVESHAM, GENTLEMAN, WHEREIN WERE TAKEN THE GOVERNOR OF THE ISLE OF SAINT MICHAEL, AND PEDRO SARMIENTO, GOVERNOR OF THE STRAITS OF MAGALANES, IN THE YEAR 1586.

[HAKLUYT, Vol. II. p. 120. Second Part.]

THE tenth of June 1586, we departed from Plymouth with two pinnaces, the one named the Serpent, of the burden of thirty-five tons, and the other the Mary Sparke of Plymouth, of the burden of fifty tons, both of them belonging to ſir Walter Ralegh knight; and directing our courſe towards the coaſt of Spain, and from thence towards the Iſles of the Azores: we took a ſmall bark laden with ſumack and other commodities, wherein was the governor of St. Michael's Iſland, being a Portugal, having other Portugals and Spaniards with him. And from thence we ſailed to the Iſland of Gracioſa, to the weſtward of the Iſland of Tercera, where we deſcried a ſail, and bearing with her, we found her to be a Spaniard: but at the firſt, not greatly reſpecting whom we took, ſo that we might have enriched ourſelves; which was the cauſe of this our travail, and for that we would not be known of what nation we were, we diſplayed a white ſilk enſign in our main top, which they ſeeing, made accompt that we had been ſome of the king of Spain's armadas, lying in wait for Engliſh men of war: but when we came within ſhot of her, we took down our white flag, and ſpread abroad the croſs of St. George, which when they ſaw, it made them to fly as faſt as they might: but all their haſte was in vain, for our ſhips were ſwifter of ſail than they, which they fearing, did preſently caſt their ordinance and ſmall ſhot, with many letters, and the draft of the Straits of Magelan into the ſea, and thereupon immediately we took her: wherein we alſo took a gentleman of Spain, named Pedro Sarmiento, governor of the Straits of Magelan: which ſaid Pedro we brought into England with us, and preſented him to our ſovereign lady the queen.

After this, lying off and about the iſlands, we deſcried another ſail, and bearing after her, we ſpent the main maſt of our admiral: but yet, in the night, our vice admiral took her, being laden with fiſh from Cape Blank, the which ſhip we let go again

for want of men to bring her home. The next day we deſcried two other ſails, the one a ſhip, and the other a caravel, to whom we gave chace, which they ſeeing, with all ſpeed made in under the Iſle of Gracioſa, to a certain fort there for their ſuccour, where they came to an anchor, and having the wind of us, we could not hurt them with our ſhips, but we having a ſmall boat, which we called a light-horſeman, wherein myſelf was, being a muſqueter, and four more with calivers, and four that rowed, came near unto the ſhore againſt the wind, which, when they ſaw us come towards them, they carried a great part of their merchandiſe on land, whither alſo the men of both veſſels went and landed, and as ſoon as we came within muſket ſhot, they began to ſhoot at us with great ordnance and ſmall ſhot, and we likewiſe at them: and in the end we boarded one ſhip, wherein was no man left, ſo we cut her cables, hoiſted her ſails, and ſent her away with two of our men, and the other ſeven of us paſſed more near unto the ſhore, and boarded the caravel, which did ride within a ſtone's caſt from the ſhore, and ſo near the land that the people did caſt ſtones at us, but yet in deſpight of them all, we took her, and one only negro therein; and cutting her cables in the hawſe we hoiſted her ſails, and being becalmed under the land, we were conſtrained to row her out with our boat; the fort ſtill ſhooting at us, and the people on land with muſkets and calivers, to the number of one hundred and fifty or thereabout: and we anſwered them with the ſmall force we had; in the time of which our ſhooting, the ſhot of my muſket being a croſs-bar-ſhot, happened to ſtrike the gunner of the fort to death, even as he was giving level to one of his great pieces, and thus we parted from them without any loſs or hurt on our ſide. And now, having taken theſe five ſails of ſhips, we did as before, turn away the ſhip with the fiſh, without hurting them, and from one of the other ſhips we took her main maſt to ſerve our admiral's turn, and ſo ſent her away, putting into her, all the Spaniards and Portugals, (ſaving that gentleman, Pedro Sarmiento, with three other of the principal men and two negroes,) leaving them all within ſight of land, with bread and water ſufficient for ten days, if need were.

Thus ſetting our courſe for England, being off the iſlands in the height of 41° or thereabout, one of our men being in the top, deſcried a ſail, then ten ſail, then fifteen, whereupon it was concluded to ſend home thoſe prizes we had, and ſo left in both our pinnaces, not above ſixty men. Thus we returned again to the fleet we had deſcried, where we found twenty-four ſail of ſhips, whereof two of them were caraks, the one of twelve hundred, the other of a thouſand tons, and ten galions; the reſt were ſmall ſhips and caravels, all laden with treaſure, ſpices, and ſugars, with which twenty-four ſhips, we, with two ſmall pinnaces did fight, and kept company the ſpace of thirty-two hours, continually fighting with them, and they with us; but the two caraks kept ſtill betwixt the fleet and us, that we could not take any one of them, ſo wanting powder, we were forced to give them over againſt our wills, for that we were all wholly bent to the gaining of ſome of them, but neceſſity compelling us, and that only for want of powder, without loſs of any of our men, (which was a thing to be wondered at, conſidering the inequality of number,) at length we gave them over. Thus, we again ſet our courſe for England, and ſo came to Plymouth within ſix hours after our prizes, which we ſent away forty hours before us, where we were received with triumphant joy, not only with great ordnance then ſhot off, but with the willing hearts of all the people of the town, and of the country thereabout; and we not ſparing our ordnance (with the powder we had left) to requite and anſwer them again. And from thence we brought our prizes to Southampton, were ſir Walter Raleigh, being our owner, rewarded us with our ſhares.

Our

Our prizes were laden with ſugars, elephants' teeth, wax, hides, rice, Braſil, and *cuſer*, as by the teſtimony of John Eveſhham himſelf, Captain Whiddon, Thomas Rainford, Bejamin Wood, William Cooper, maſter, William Corniſh, maſter, Thomas Drake, corporal, John Ladd, gunner, William Wareſield, gunner, Richard Moon, John Drew, Richard Cooper of Harwich, William Beares of Ratcliffe, John Row of Saltaſh, and many others, may appear.

A REPORT OF MASTER ROBERT FLICKE, DIRECTED TO MASTER THOMAS BROMLEY, MASTER RICHARD STAPER, AND MASTER CORDALL, CONCERNING THE SUCCESS OF A PART OF THE LONDON SUPPLIES SENT TO MY LORD THOMAS HOWARD TO THE ISLES OF THE AZORES, 1591.

[HAKLUYT, Vol. II. p. 176. Second Part.]

WORSHIPFUL, my hearty commendations unto you premiſed: by my laſt of the twelfth of Auguſt from this place, I advertiſed you particularly of the accidents of our fleet until then. It remaineth now to relate our endeavours in accompliſhing the order received for the joining with my Lord Thomas Howard, together with the ſucceſs we have had. Our departure from hence was the ſeventeenth of Auguſt, the wind not ſerving before. The next day following I cauſed a flag of counſel to be put forth, whereupon the captains and maſters of every ſhip came aboard, and I acquainted them with my commiſſion, firmed by the Right Honourable the Lords of Her Majeſty's Council; and with all the advertiſements of Sir Edward Denny, of my Lord's determination to remain threeſcore leagues to the weſt of Fayal, ſpreading north and ſouth, betwixt thirty-ſeven and a half, or thirty-eight and a half degrees. And, not finding him in this height, to repair to the Iſles of Flores and Corvo, where a pinnace of purpoſe ſhould ſtay our coming until the laſt of Auguſt, with intent after that day to repair to the coaſt of Spain, about the height of the Rock, ſome twenty or thirty leagues off the ſhore. The which being adviſedly conſidered of, having regard unto the ſhortneſs of time, by reaſon of our long abode in this place, and the uncertainty of the weather to favour us, it was generally holden for the beſt and ſecureſt way to meet with my Lord, to bear with the height of the Rock, without making any ſtay upon the coaſt, and ſo directly for the iſlands, which was accordingly fully agreed and performed. The twenty-eighth day we had ſight of the Burlings, and the twenty-ninth, being thwart of Peniche, the wind ſerving us, without any ſtay we directed our courſe weſt for the iſlands. The thirtieth day we met with captain Royden in the Red Roſe, ſometime called the Golden Dragon, ſeparated from my Lord of Cumberland in a ſtorm: who certified us of fifty ſails of the Spaniſh king's armadas to be gone for the iſlands, but could not inform us any news of my Lord Thomas Howard, otherwiſe than upon preſumption to remain about the iſlands, and ſo we continued our courſe, the wind ſtanding with us.

The fourth of September we recovered Tercera, and ranged along all the iſlands, both on the ſouth and north ſides the ſpace of four days: during which time it was not our hap to meet with any ſhipping, whereby either to underſtand of my Lord, or of the Indian fleet: hereupon we directed our courſe to the weſt from Fayal, according to the inſtructions of Sir Edward Denny. The eleventh day in the plying to the weſtwards we deſcried a ſail out of our main-top, and in the afternoon between two and

and three of the clock, having raiſed her hull, the weather became calm, ſo that the ſhip could not fetch her. I ſent off my ſkiff thoroughly manned, furniſhed with ſhot and ſwords, the Cherubin, and the Margaret and John doing the like. Upon this the ſail ſtood off again, and the night approaching, our boats loſt her and ſo returned. In this our purſuit after the ſail, the Centurion being left a-ſtern, the next morning we miſſed her, and ſpent that day plying up and down ſeeking her. And for as much as every of the ſhips had received order, that, if by extremity of weather or any other miſchance they ſhould be ſevered from our fleet, they ſhould meet and join at Flores, we, according to the inſtructions of Sir Edward Denny, proceeded to the finding of my Lord Thomas Howard, being in the height appointed, and not able to hold the ſame by reaſon of extreme tempeſts which forced us to the iſles of Flores and Corvo, which we made the fourteenth day in the morning, and there alſo joined again with the Centurion, whoſe company before we had loſt: who declared unto us, that the twelfth day, being the ſame day they loſt us, they met with five and-forty ſails of the Indian fleet. The ſame night, upon theſe news, we came to an anchor between Flores and Corvo, and the morrow following at the break of day, a flag of counſel being put out, the captains and maſters came aboard me: where, for the deſire to underſtand ſome tidings of my Lord, as alſo the ſupplying of our want of water, it was thought good to ſend our boats furniſhed on ſhore, under the conduct of captain Brothers, and then it was alſo ordered, after our departure thence, to range along the ſouth ſides of the iſlands, to the end we might either underſtand of my Lord, or elſe light on the Indian fleet; and, in the miſſing of our purpoſe, to direct our courſe for Cape Saint Vincent.

The boats, according to the foreſaid determination, being ſent on ſhore, it chanced that the Coſtly, riding uttermoſt in the road, did weigh to bring herſelf more near among us for the ſuccour of the boats ſent off, and in opening the land diſcovered two ſails, which we in the roads could not perceive: whereupon ſhe gave us a warning-piece, which cauſed us to wave off our boats back, and before they could recover our ſhips, the deſcried ſhips appeared unto us, towards the which we made with all haſte, and in a very happy hour, as it pleaſed God. In that we had not ſo ſoon cleared the land, and ſpoken with one of them, which was a bark of Briſtol, who had alſo ſought my Lord in the heights appointed, and could not find him, but a violent ſtorm aroſe, in ſuch a manner, as if we had remained in the road, we had been in danger of periſhing: and the ſame extremely continued during the ſpace of threeſcore hours. In which ſtorm I was ſeparated from our fleet, except the Cherubin and the Coſtly, which kept company with me. And ſo ſailing among the iſlands, I viewed the road of Fayal, and finding no roaders there, went directly for the iſle of Tercera.

The nineteenth in the morning, coming unto the ſame with intent to edge into the road, a tempeſt aroſe and ſcanted the wind, that we could not ſeaze it: from the which being driven, we fell among certain of the Indian fleet, which the ſaid ſtorm diſperſed, and put them from the road: whereupon myſelf with the other two ſhips in company gave ſeveral chaces, and thereby loſt the company each of other.

In following our chace above noon we made her to ſtrike and yield, being a Portugal, laden with hides, ſalſa-perilla, and anile. At this very inſtant we eſpied another, and taking our prize with us followed her, and ſomewhat before night obtained her, named the Conception, Franciſco Spinola being captain, which was laden with hides, cochonillio, and certain raw ſilk; and for that the ſeas were ſo growen, as neither with boat nor ſhip they were to be boarded, we kept them till fit opportunity. The ſame night, a little before day, there happened another into our company, ſuppoſing us by our two prizes to be of their fleet, which we until the morning diſſembled.

The

The twentieth day, in the morning, the ſail being ſhot ſomewhat a-head of us, having a ſpecial care for the ſafe keeping of the two former; we purpoſed to cauſe our prizes to put out more ſail, thereby to keep them near in giving chace to the other: unto the which the maſter would not hearken nor be perſuaded, but that they would follow us; by the which his wilfulneſs by ſuch time as we had cauſed the other to yield, and ſent men on board, the Conception, Franciſco Spinola captain, being brought aſtern, and having gotten the wind of us, ſtood off with all her ſails bearing, ſo as we were forced to make a new chace of her; and had not the wind enlarged upon us we had loſt her. In the purſuit before we recovered her, and brought ourſelves again in company of our other prizes, the whole day was ſpent, and by this means we loſt the opportunity of that day, the weather fitly ſerving to board the Portugal prize, which was in great diſtreſs, and made requeſt to take them, being ready to ſink, and, as we well perceived, they ceaſed not to pump day and night; the which ſhip to all our judgments the ſame night periſhed in the ſea.

The one-and-twenty day, the Conception, whereof Franciſco Spinola was captain, being alſo in a leak, and the ſame ſtill increaſing, notwithſtanding the continual pumping, in ſuch ſort as not to be kept long above water, I took and diſcharged out of her two-and-forty cheſts of cochonillio and ſilks, and ſo left her with eleven feet water in hold, and her furniture and four thouſand ſeven-hundred hides unto the ſeas.

The other prize, which we have brought into the harbour, is named Noſtra Sennora de los Remedios, whereof Franciſco Alvares is captain, laden with ſixteen cheſts of cochonillio, certain fardels of raw ſilk, and about four thouſand hides. Upon the diſcharge of the goods your worſhips ſhall be particularly advertiſed thereof.

In the boarding of the prizes the diſorder of the company was ſuch, as that they letted not preſently beſides the rifling of the Spaniards, to break open the cheſts and to purloin ſuch money as was in them: notwithſtanding that it was ordered at convenient leiſure to have gone aboard myſelf, and there, in the preſence of three or four witneſſes, to have taken a juſt account thereof, and the ſame to have put in ſafe keeping, according to the effects of articles received in this behalf.

And whereas there were alſo certain ſums of money taken from the company which they had thus purloined and embezzled, and the ſame with ſome other parcels brought aboard my ſhip, amounting unto two thouſand one hundred and twenty-nine pezoes and a half, the company, as pillage due unto them, demanded to have the ſame ſhared, which I refuſed, and openly at the main-maſt read the articles formed by my lord treaſurer and my lord-admiral, whereby we ought to be directed, and that it was not in me any way to diſpoſe thereof until the ſame were finally determined at home. Hereupon they mutinied, and at laſt grew into ſuch fury, as that they would have it or elſe break down the cabin, which they were alſo ready to put in practice, whereby I was forced to yield, leſt the Spaniards which we had aboard, being many, perceiving the ſame, might have had fit opportunity to riſe againſt us, which, after their brawls were appeaſed, they fought to have put in execution.

By the laſt advice from Caſtile, the general of the king's armada, which is lately come to ſea, hath received commandment to join his fleet with thoſe of the Indies, and for to ſtay altogether at Tercera till the fifteenth of October; for that ſix pataches, with ſeven or eight millions of the king's treaſure, will come by that time, or elſe they ſtay their coming from Havanna until January next, or the king's further pleaſure therein to be known. Theſe pataches are ſaid to be of three hundred tons the piece, and to carry thirty pieces of braſs, and alſo of ſail reported to have the advantage of any ſhipping.

There

There periſhed of the Indies fleet, ſunk in the ſea before their coming to Flores, eleven ſails, whereof the general was one, and not one man ſaved. And it is by the Spaniards themſelves pre-ſuppoſed, that the ſtorms which we had at Flores and at Tercera have devoured many more of them, whereof in part we were eye-witneſſes: and ſo, what by the ſeas and our men of war, I preſume that of ſeventy-five ſails that came from Havana, half of them will never arrive in Spain.

The eleventh day of October, at night, we came to anchor in the ſound of Plymouth, and the next morning with our prize came into Cattewater, for which God be thanked; for that a vehement ſtorm aroſe, and with ſuch fury increaſed, as that the prize was forced to cut over her main-maſt, otherwiſe with the violence of the ſtorm, her ground-tackle being bad, ſhe had driven on ſhore, which was the moſt cauſe that moved me to put in here; intending now here to diſcharge the goods without further adventure, and have certified thus much unto my lord-admiral, and therewith alſo deſired to underſtand the direction of the lords of the counſel, together with yours, inſomuch as my lord Thomas Howard is not returned. How the reſt of our conſorts, which were ſeparated from us, have ſped, or what prizes they have taken, whereof there is much hope, by reaſon of ſcattering of the Weſt Indian fleet, as yet we are able to ſay nothing. And thus, expecting your anſwer, and for all other matters referring me unto the bearer, captain Furtho, I end.

Your worſhip's loving friend,

ROBERT FLICKE.

Plymouth, the twenty-fourth of October 1591.

A REPORT OF THE TRUTH OF THE FIGHT ABOUT THE ISLES OF AZORES, THE LAST OF AUGUST 1591, BETWIXT THE REVENGE, ONE OF HER MAJESTY'S SHIPS, AND AN ARMADA OF THE KING OF SPAIN: PENNED BY THE HONOURABLE SIR WALTER RALEIGH, KNIGHT.

[HAKLUYT, II. 169. Second Part.]

BECAUSE the rumours are diverſely ſpread, as well in England as in the Low Countries and elſewhere, of this late encounter between her Majeſty's ſhips and the armada of Spain; and that the Spaniards, according to their uſual manner, fill the world with their vain-glorious vaunts, making great appearance of victories, when, on the contrary, themſelves are moſt commonly and ſhamefully beaten and diſhonoured, thereby hoping to poſſeſs the ignorant multitude by anticipating and forerunning falſe reports: it is agreeable with all good reaſon, for manifeſtation of the truth, to overcome falſehood and untruth, that the beginning, continuance, and ſucceſs of this late honourable encounter of Sir Richard Greenvil, and other her majeſty's captains, with the armada of Spain, ſhould be truly ſet down and publiſhed without partiality or falſe imaginations. And it is no marvel that the Spaniard ſhould ſeek by falſe and ſlanderous pamphlets, adviſoes, and letters, to cover their own loſs, and to derogate from others their due honours, eſpecially in this fight being performed far off; ſeeing they were not aſhamed in the year 1588, when they purpoſed the invaſion of this land, to publiſh in ſundry lan-

guages in print, great victories in words, which they pleaded to have obtained againſt this realm; and ſpread the fame in a moſt falſe ſort over all parts of France, Italy, and elſewhere. When ſhortly after it was happily manifeſted in very deed to all nations, how their navy, which they termed invincible, conſiſting of 140 ſail of ſhips, not only of their own kingdom, but ſtrengthened with the greateſt Argoſies, Portugal caracks, Florentines, and huge hulks of other countries, were by 30 of her majeſty's own ſhips of war, and a few of our own merchants, by the wiſe, valiant, and advantageous conduct of the Lord Charles Howard, high admiral of England, beaten and ſhuffled together; even from the Lizard in Cornwall firſt to Portland, where they ſhamefully left don Pedro de Valdes, with his mighty ſhip; from Portland to Cales, where they loſt Hugo de Moncado, with the gallias of which he was captain, and from Cales, driven with ſquibs from their anchors, were chaſed out of the ſight of England, round about Scotland and Ireland. Where, for the ſympathy of their barbarous religion, hoping to find ſuccour and aſſiſtance, a great part of them were cruſhed againſt the rocks, and thoſe other that landed, being very many in number, were notwithſtanding broken, ſlain, and taken, and ſo ſent from village to village coupled in halters, to be ſhipped into England. Where her majeſty of her princely and invincible diſpoſition, diſdaining to put them to death, and ſcorning either to retain or entertain them, they were all ſent back again to their countries, to witneſs and recount the worthy atchievements of their invincible and dreadful navy; of which the number of ſoldiers, the fearful burthen of their ſhips, the commander's name of every ſquadron, with all other their magazines of proviſions, were put in print as an army and navy unreſiſtible, and diſdaining prevention. With all which ſo great and terrible an oſtentation, they did not, in all their ſailing round England, ſo much as ſink or take one ſhip, bark, pinnace, or cockboat of ours; or ever burnt ſo much as one ſheepcot of this land. Whereas on the contrary, ſir Richard Drake, with only 800 ſoldiers not long before, landed in their Indies, and forced Sant-Jago, Santo Domingo, Cartagena, and the forts of Florida.

And after that ſir John Norris marched from Peniche in Portugal, with a handful of ſoldiers to the gates of Liſbon, being above 40 Engliſh miles. Where the earl of Eſſex himſelf and other valiant gentlemen braved the city of Liſbon, encamped at the very gates; from whence, after many days abode, finding neither promiſed party, nor proviſion to batter, they made retreat by land, in deſpight of all their garriſons, both of horſe and foot. In this ſort I have a little digreſſed from my firſt purpoſe, only by the neceſſary compariſon of their and our actions: the one covetous of honour without vaunt of oſtentation; the other ſo greedy to purchaſe the opinion of their own affairs, and by falſe rumours to reſiſt the blaſts of their own diſhonours, as they will not only not bluſh to ſpread all manner of untruths; but even for the leaſt advantage, be it but for the taking of one poor adventurer of the Engliſh, will celebrate the victory with bonfires in every town, always ſpending more in faggots than the purchaſe was worth they obtained. When as we never thought it worth the conſumption of two billets, when we have taken eight or ten of their Indian ſhips at one time, and twenty of the Brazil fleet. Such is the difference between true valour and oſtentation, and between honourable actions, and frivolous vain-glorious vaunts. But now to return to my purpoſe.

The Lord Thomas Howard, with ſix of her majeſty's ſhips, ſix victuallers of London, the bark Ralegh, and two or three other pinnaces, riding at anchor near unto Flores, one of the weſterly iſlands of the Azores, the laſt of Auguſt in the afternoon, had intelligence by one captain Middleton of the approach of the Spaniſh armada.

Which Middleton, being in a very good ſailor, had kept them company three days before, of good purpoſe, both to diſcover their forces the more, as alſo to give advice to my Lord Thomas of their approach. He had no ſooner delivered the news, but the fleet was in ſight: many of our ſhips' companies were on ſhore in the iſland, ſome providing ballaſt for their ſhips; others filling of water and refreſhing themſelves from the land with ſuch things as they could either for money or by force recover. By reaſon whereof our ſhips being all peſtered, and romaging every thing out of order, very light for want of ballaſt, and that which was moſt to our diſadvantage, the one half part of the men of every ſhip ſick, and utterly unſerviceable; for in the Revenge there were ninety diſeaſed; in the Bonaventure, not ſo many in health as could handle her main-ſail. For had not twenty men been taken out of a bark of ſir George Carey's, his being commanded to be ſunk, and thoſe appointed to her, ſhe had hardly ever recovered England. The reſt, for the moſt part, were in little better ſtate. The names of her majeſty's ſhips were theſe, as followeth: the Defiance, which was admiral, the Revenge vice-admiral, the Bonaventure, commanded by captain Croſſe, the Lion by George Fenner, the Foreſight by M. Thomas Vavaſour, and the Crane by Duffild. The Foreſight and the Crane being but ſmall ſhips; only the other were of the middle ſize; the reſt, beſides the bark Ralegh, commanded by captain Thin, were victuallers, and of ſmall force or none. The Spaniſh fleet having ſhrouded their approach by reaſon of the iſland, were now ſo ſoon at hand, as our ſhips had ſcarce time to weigh their anchors, but ſome of them were driven to let ſlip their cables and ſet ſail. Sir Richard Grenvill was the laſt that weighed, to recover the men that were upon the iſland, which otherwiſe had been loſt. The lord Thomas with the reſt very hardly recovered the wind, which ſir Richard Grenvill not being able to do, was perſuaded by the maſter and others to cut his main-ſail, and caſt about, and to truſt to the ſailing of the ſhip; for the ſquadron of Sivil were on his weather-bow. But ſir Richard utterly refuſed to turn from the enemy, alledging that he would rather chooſe to die, than to diſhonour himſelf, his country, and her majeſty's ſhip, perſuading his company that he would paſs through the two ſquadrons in deſpight of them, and enforce thoſe of Sivil to give him way. Which he performed upon divers of the foremoſt, who, as the mariners term it, ſprang their luff, and fell under the lee of the Revenge. But the other courſe had been the better, and might right well have been anſwered in ſo great an impoſſibility of prevailing. Notwithſtanding out of the greatneſs of his mind he could not be perſuaded. In the mean while as he attended thoſe which were neareſt him, the great San Philip being in the wind of him, and coming towards him, becalmed his ſails in ſuch ſort, as the ſhip could neither make way, nor feel the helm: ſo huge and high carged was the Spaniſh ſhip, being of a thouſand and five hundred tons; who after laid the Revenge aboard. When he was thus bereft of his ſails, the ſhips that were under his lee luffing up, alſo laid him aboard; of which the next was the admiral of the Biſcaines, a very mighty and puiſſant ſhip, commanded by Brittandona. The ſaid Philip carried three tier of ordnance on a ſide, and eleven pieces in every tier. She ſhot eight forth right out of her chaſe, beſides thoſe of her ſtern ports.

After the Revenge was entangled with this Philip, four other boarded her; two on her larboard, and two on her ſtarboard. The fight thus beginning at three o'clock in the afternoon, continued very terrible all that evening. But the great San Philip having received the lower tier of the Revenge, diſcharged with croſſ-bar-ſhot, ſhifted herſelf with all diligence from her ſides, utterly miſliking her firſt entertainment. Some ſay that the ſhip foundered, but we cannot report it for truth, unleſs we were aſſured.

The

The Spaniſh ſhips were filled with companies of ſoldiers, in ſome two hundred, beſides the mariners; in ſome five, in others eight hundred. In ours there were none at all beſides the mariners, but the ſervants of the commanders, and ſome few voluntary gentlemen only. After many interchanged vollies of great ordnance and ſmall ſhot, the Spaniards deliberated to enter the Revenge, and made divers attempts, hoping to force her, by the multitudes of their armed ſoldiers and muſketeers, but were ſtill repulſed again and again, and at all times beaten back into their own ſhips, or into the ſeas. In the beginning of the fight, the George Noble, of London, having received ſome ſhot through her, by the armadas, fell under the lee of the Revenge, and aſked ſir Richard what he would command him, being but one of the victuallers, and of ſmall force: ſir Richard bid him ſave himſelf, and leave him to his fortune. After the fight had thus, without intermiſſion, continued while the day laſted, and ſome hours of the night, many of our men were ſlain and hurt, and one of the great gallions of the armada, and the admiral of the hulks both ſunk, and in many other of the Spaniſh ſhips great ſlaughter was made. Some write that ſir Richard was very dangerouſly hurt almoſt in the beginning of the fight, and lay ſpeechleſs for a time ere he recovered. But two of the Revenge's own company, brought home in a ſhip of Lime from the iſlands, examined by ſome of the lords, and others, affirmed that he was never ſo wounded as that he forſook the upper deck, till an hour before midnight; and then being ſhot into the body with a muſket as he was a dreſſing, was again ſhot into the head, and withal his chirurgion wounded to death. This agreeth alſo with an examination taken by ſir Francis Godolphin, of four other mariners of the ſame ſhip being returned, which examination, the ſaid ſir Francis ſent unto maſter William Killegrue, of her majeſty's privy chamber.

But to return to the fight, the Spaniſh ſhips which attempted to board the Revenge, as they were wounded and beaten off, ſo always others came in their places, ſhe having never leſs than two mighty gallions by her ſides, and aboard her: ſo that ere the morning, from three of the clock the day before, there had fifteen ſeveral armadas aſſailed her; and all ſo ill approved their entertainment, as they were by the break of day, far more willing to hearken to a compoſition, than haſtily to make any more aſſaults or entries. But as the day encreaſed, ſo our men decreaſed; and as the light grew more and more, by ſo much more grew our diſcomforts; for none appeared in ſight but enemies, ſaving one ſmall ſhip called the Pilgrim, commanded by Jacob Whiddon, who hovered all night to ſee the ſucceſs; but in the morning bearing with the Revenge, was hunted like a hare amongſt many ravenous hounds, but eſcaped.

All the powder of the Revenge to the laſt barrel was now ſpent, all her pikes broken, forty of her beſt men ſlain, and the moſt part of the reſt hurt. In the beginning of the fight ſhe had but one hundred free from ſickneſs, and four ſcore and ten ſick, laid in hold upon the ballaſt. A ſmall troop to man ſuch a ſhip, and a weak garriſon to reſiſt ſo mighty an army. By thoſe hundred all was ſuſtained, the vollies, boardings, and enterings of fifteen ſhips of war, beſides thoſe which beat her at large. On the contrary, the Spaniſh were always ſupplied with ſoldiers brought from every ſquadron: all manner of arms and powder at will. Unto ours there remained no comfort at all, no hope, no ſupply either of ſhips, men, or weapons; the maſts all beaten overboard, all her tackle cut aſunder, her upper work altogether raſed, and in effect evened ſhe was with the water, but the very foundation or bottom of a ſhip, nothing being left overhead, either for flight or defence. Sir Richard finding himſelf in this diſtreſs, and unable any longer to make reſiſtance, having endured, in this fifteen hours fight, the aſſault of fifteen ſeveral armadas, all by turns aboard him, and by eſtimation eight hundred ſhot of great artillery, beſides many aſſaults and entries; and that the ſhip and

himſelf muſt needs be poſſeſſed by the enemy, who were now all caſt in a ring round about him (the Revenge not able to move one way or other, but as ſhe was moved with the waves and billows of the ſea) commanded the maſter gunner, whom he knew to be a moſt reſolute man, to ſplit and ſink the ſhip; that thereby nothing might remain of glory or victory to the Spaniards; ſeeing in ſo many hours fight, and with ſo great a navy they were not able to take her, having had fifteen hours time, above ten thouſand men, and fifty and three ſail of men of war to perform it withal; and perſuaded the company, or as many as he could induce, to yield themſelves unto God, and to the mercy of none elſe; but as they had, like valiant reſolute men, repulſed ſo many enemies, they ſhould not now ſhorten the honour of their nation, by prolonging their lives for a few hours, or a few days. The maſter gunner readily condeſcended, and divers others; but the captain and the maſter were of another opinion, and beſought ſir Richard to have care of them; alledging that the Spaniard would be as ready to entertain a compoſition, as they were willing to offer the ſame; and that there being divers ſufficient and valiant men yet living, and whoſe wounds were not mortal, they might do their country and prince acceptable ſervice hereafter. And whereas ſir Richard had alledged that the Spaniards ſhould never glory to have taken one ſhip of her majeſty, ſeeing they had ſo long and ſo notably defended themſelves; they anſwered, that the ſhip had ſix feet water in hold, three ſhot under water, which were ſo weakly ſtopped, as with the firſt working of the ſea, ſhe muſt needs ſink; and was beſides ſo cruſhed and bruiſed, as ſhe could never be removed out of the place.

And as the matter was thus in diſpute, and ſir Richard refuſing to hearken to any of thoſe reaſons; the maſter of the Revenge (while the captain won unto him the greater party) was conveyed aboard the General Don Alfonſo Baçan; who (finding none over haſty to enter the Revenge again, doubting leſt ſir Richard would have blown them up and himſelf, and perceiving by the report of the maſter of the Revenge his dangerous diſpoſition,) yielded that all their lives ſhould be ſaved, the company ſent for England, and the better ſort to pay ſuch reaſonable ranſom as their eſtate would bear, and in the mean ſeaſon to be free from galley or impriſonment. To this he ſo much the rather condeſcended as well, as I have ſaid, for fear of further loſs and miſchief to themſelves, as alſo for the deſire he had to recover ſir Richard Greenvil; whom for his notable valour he ſeemed greatly to honour and admire.

When this anſwer was returned, and that ſafety of life was promiſed, the common ſort being now at the end of their peril, the moſt drew back from ſir Richard and the maſter gunner, being no hard matter to diſſuade men from death to life. The maſter gunner finding himſelf and ſir Richard thus prevented and maſtered by the greater number, would have ſlain himſelf with a ſword had he not been by force withheld, and locked into his cabin. Then the general ſent many boats aboard the Revenge; and divers of our men, fearing ſir Richard's diſpoſition, ſtole away aboard the General and other ſhips. Sir Richard thus overmatched, was ſent unto by Alfonſo Baçan to remove out of the Revenge, the ſhip being marvellous unſavoury, filled with blood and bodies of dead, and wounded men like a ſlaughter-houſe. Sir Richard anſwered that he might do with his body what he liſt, for he eſteemed it not, and as he was carried out of the ſhip he ſwooned, and reviving again, deſired the company to pray for him. The general uſed ſir Richard with all humanity, and left nothing unattempted that tended to his recovery, highly commending his valour and worthineſs, and greatly bewailing the danger wherein he was, being unto them a rare ſpectacle, and a reſolution ſeldom approved, to ſee one ſhip turn towards ſo many enemies, to endure the charge and boarding of ſo many huge armadas, and to reſiſt and repel the aſſaults

and entries of ſo many ſoldiers. All which and more is confirmed by a Spaniſh captain of the ſame armada, and a preſent actor in the fight, who being ſevered from the reſt in a ſtorm, was by the Lion of London, a ſmall ſhip, taken, and is now priſoner in London.

The general commander of the armada was don Alfonſo Baçan, brother to the marquis of Santa Cruz. The admiral of the Biſcaine ſquadron was Britandona. Of the ſquadron of Sivil, the marquis of Arumburch. The hulks and fly-boats were commanded by Luis Coutinho. There were ſlain and drowned in this fight well near one thouſand of the enemies, and two ſpecial commanders, don Luis de Sant John, and don George de Prunaria de Mallaga, as the Spaniſh captain confeſſeth, beſides divers others of ſpecial account, whereof as yet report is not made.

The admiral of the hulks and the Aſcenſion of Sivil were both ſunk by the ſide of the Revenge; one other recovered the road of St. Michael, and ſunk alſo there; a fourth ran herſelf with the ſhore to ſave her men. Sir Richard died as it is ſaid, the ſecond or third day aboard the General; and was by them greatly bewailed. What became of his body, whether it was buried in the ſea or on the land we know not: the comfort that remaineth to his friends is, that he hath ended his life honorably in reſpect of the reputation won to his nation and country, and of the ſame to his poſterity, and that being dead, he hath not outlived his own honour.

For the reſt of her majeſty's ſhips that entered not ſo far into the fight as the Revenge, the reaſons and cauſes were theſe. There were of them but ſix in all, whereof two but ſmall ſhips; the Revenge engaged paſt recovery; the iſland of Flores was on the one ſide, 53 ſail of the Spaniſh, divided into ſquadrons on the other, all as full filled with ſoldiers as they could contain; almoſt the one half of our men ſick and not able to ſerve; the ſhips grown foul, and ſcarcely able to bear any ſail for want of ballaſt, having been ſix months at the ſea before. If all the reſt had entered, all had been loſt; for the very hugeneſs of the Spaniſh fleet, if no other violence had been offered, would have cruſhed them between them into ſhivers. Of which the diſhonour and loſs to the queen had been far greater than the ſpoil or harm that the enemy could any way have received. Notwithſtanding it is very true, that the lord Thomas would have entered between the ſquadrons, but the reſt would not condeſcend; and the maſter of his own ſhip offered to leap into the ſea rather than to conduct that her majeſty's ſhip and the reſt to be a prey to the enemy, where there was no hope nor poſſibility either of defence or victory. Which alſo in my opinion had ill ſorted or anſwered the diſcretion and truſt of a general, to commit himſelf and his charge to an aſſured deſtruction, without hope or any likelihood of prevailing: thereby to diminiſh the ſtrength of her majeſty's navy, and to enrich the pride and glory of the enemy. The Foreſight of the queen's, commanded by M. Thomas Vaviſor, performed a very great fight, and ſtaid two hours as near the Revenge as the weather would permit, not forſaking the fight, till he was like to be encompaſſed by the ſquadrons, and with great difficulty cleared himſelf. The reſt gave divers vollies of ſhot, and entered as far as the place permitted, and their own neceſſities, to keep the weather gage of the enemy, until they were parted by night. A few days after the fight was ended, and the Engliſh priſoners diſperſed into the Spaniſh and India ſhips, there aroſe ſo great a ſtorm from the W. and N. W. that all the fleet was diſperſed, as well the Indian fleet, which were then come unto them, as the reſt of the armada that attended their arrival, of which 14 ſail together with the Revenge, and in her 200 Spaniards, where caſt away upon the iſle of St. Michael. So it pleaſed them to honour the burial of that renowned ſhip the Revenge, not ſuffering her to periſh alone, for the great honour ſhe atchieved

atchieved in her lifetime. On the reſt of the iſlands there were caſt away in this ſtorm fifteen or ſixteen more of the ſhips of war; and of an hundred and odd ſail of the India fleet, expected this year in Spain, what in this tempeſt, and what before in the bay of Mexico, and about the Bermudas, there were 70 and odd conſumed and loſt, with thoſe taken by our ſhips of London, beſides one very rich Indian ſhip, which ſet herſelf on fire, being boarded by the Pilgrim, and five other taken by maſter Wats his ſhips of London, between the Havana and Cape St. Antonio. The fourth of this month of November we received letters from the Tercera, affirming that theſe are three thouſand bodies of men remaining in that iſland, ſaved out of the periſhed ſhips; and that by the Spaniards' own confeſſion, there are ten thouſand caſt away in this ſtorm, beſides thoſe that are periſhed between the iſlands and the main. Thus it hath pleaſed God to fight for us, and to defend the juſtice of our cauſe againſt the ambitious and bloody pretences of the Spaniard, who ſeeking to devour all nations, are themſelves devoured. A manifold teſtimony how unjuſt and diſpleaſing their attempts are in the ſight of God, who hath pleaſed to witneſs, by the ſucceſs of their affairs, his miſlike of their bloody and injurious deſigns, purpoſed and practiſed againſt all Chriſtian princes, over whom they ſeek unlawful and ungodly rule and empire.

One day or two before this wreck happened to the Spaniſh fleet, when as ſome of our priſoners deſired to be ſet on ſhore upon the iſlands, hoping to be from thence tranſported into England, which liberty was formerly by the general promiſed: one Morice Fitz John, ſon of old John of Deſmond, a notable traitor, couſin german to the late earl of Deſmond, was ſent to the Engliſh from ſhip to ſhip, to perſuade them to ſerve the King of Spain. The arguments he uſed to induce them were theſe. The increaſe of pay which he promiſed to be trebled: advancement to the better ſort: and the exerciſe of the true Catholic religion, and ſafety of their ſouls to all. For the firſt, even the beggarly and unnatural behaviour of thoſe Engliſh and Iriſh rebels, that ſerved the king in that preſent action, was ſufficient to anſwer that firſt argument of rich pay. For ſo poor and beggarly they were, as for want of apparel they ſtripped their poor countrymen priſoners out of their ragged garments, worn to nothing by ſix months ſervice, and ſpared not to deſpoil them even of their bloody ſhirts, from their wounded bodies, and the very ſhoes from their feet; a notable teſtimony of their rich entertainment and great wages. The ſecond reaſon was hope of advancement if they ſerved well, and would continue faithful to the king. But what man can be ſo blockiſhly ignorant ever to expect place or honour from a foreign king, having no other argument or perſuaſion than his own diſloyalty; to be unnatural to his own country that bred him; to his parents that begat him, and rebellious to his true prince, to whoſe obedience he is bound by oath, by nature, and by religion? No, they are only aſſured to be employed in all deſperate enterprizes, to be held in ſcorn and diſdain even among thoſe whom they ſerve. And that ever traitor was either truſted or advanced I could never yet read, neither can I at this time remember any example. And no man could have leſs become the place of an orator for ſuch a purpoſe, than this Morice of Deſmond. For the earl his couſin being one of the greateſt ſubjects in that kingdom of Ireland, having almoſt whole counties in his poſſeſſion; ſo many goodly manors, caſtles, and lordſhips; the count palatine of Kerry, five hundred gentlemen of his own name and family to follow him, beſides others (all which he and his anceſtors poſſeſſed in peace for three or four hundred years,) was in leſs than three years after his adhering to the Spaniards and rebellion, beaten from all his holds, not ſo many as ten gentlemen of his name left living; himſelf taken and beheaded by a ſoldier of his own nation, and his land given by a parliament to her majeſty, and poſſeſſed by the Engliſh: his other couſin Sir John

of

of Desmond taken by master John Zouch, and his body hanged over the gates of his native city to be devoured by ravens: the third brother Sir James hanged, drawn, and quartered in the same place. If he had withal vaunted of his success of his own house, no doubt the argument would have moved much, and wrought great effect; which because he for that present forgot, I thought it good to remember in his behalf. For matter of religion it would require a particular volume, if I should set down how irreligiously they cover their greedy and ambitious pretences, with that veil of piety. But sure I am, that there is no kingdom or commonweath in all Europe, but if they be reformed, they then invade it for religion sake: if it be, as they term Catholic, they pretend title; as if the kings of Castile were the natural heirs of all the world: and so between both, no kingdom is unsought. Where they dare not with their own forces to invade, they basely entertain the traitors and vagabonds of all nations, seeking by those, and by their runnagate jesuits to win parts, and have by that means ruined many noble houses and others in this land, and have extinguished both their lives and families. What good, honour, or fortune ever man yet by them atchieved, is yet unheard of, or unwritten. And if our English Papists do but look into Portugal, against which they have no pretence of religion, how the nobility are put to death, imprisoned, their rich men made a prey, and all sort of people captived; they shall find that the obedience even of the Turk is easy and a liberty, in respect of the slavery and tyranny of Spain. What have they done in Sicill, in Naples, Millaine, and in the Low countries; who hath there been spared for religion at all? and it cometh to my remembrance of a certain burgher of Antwerp, whose house being entered by a company of Spanish soldiers, when they first sacked the city, he besought them to spare him and his goods, being a good catholic, and one of their own party and faction. The Spaniards answered, that they knew him to be of a good conscience for himself, but his money, plate, jewels, and goods, were all heretical, and therefore good prize. So they abused and tormented the foolish Fleming, who hoped that an Agnus Dei had been a sufficient target against all force of that holy and charitable nation. Neither have they at any time, as they protest, invaded the kingdoms of the Indies and Peru, and elsewhere, but only led thereunto, rather to reduce the people to christianity, than for either gold or empire. When as in one only island, called Hispaniola, they have wasted thirty hundred thousand of the natural people, besides many millions else in other places of the Indies; a poor and harmless people, created of God, and might have been won to his knowledge, as many of them were, and almost as many as ever were persuaded thereunto. The story whereof is at large written by a bishop of their own nation, called Bartholomew de las Casas, and translated into English and many other languages, intitled, "the Spanish Cruelties." Who would, therefore, repose trust in such a nation of ravenous strangers, and especially in those Spaniards which more greedily thirst after English blood, than after the lives of any other people of Europe, for the many overthrows and dishonours they have received at our hands, whose weakness we have discovered to the world, and whose forces at home, abroad, in Europe, in India, by sea and land, we have even with handfulls of men and ships overthrown and dishonoured. Let not therefore, any Englishman, of what religion soever, have other opinion of the Spaniards, but that those whom he seeketh to win of our nation, he esteemeth base and traitorous, unworthy persons, or unconstant fools; and that he useth his pretence of religion, for no other purpose but to bewitch us from the obedience of our natural prince; thereby hoping, in time, to bring us to slavery and subjection, and then none shall be unto them so odious and disdained as the traitors themselves, who have sold their country to a stranger, and for-

ſaken their faith and obedience, contrary to nature and religion; and contrary to that humane and general honour, not only of chriſtians, but of heathen and irreligious nations, who have always ſuſtained what labour ſoever, and embraced even death itſelf, for their country, prince, or commonwealth. To conclude, it hath ever to this day, pleaſed God to proſper and defend her majeſty, to break the purpoſes of malicious enemies, of forſworn traitors, and of unjuſt practices and invaſions. She hath ever been honoured of the worthieſt kings, ſerved by faithful ſubjects, and ſhall by the favour of God, reſiſt, repel, and confound all whatſoever attempts againſt her ſacred perſon or kingdom. In the mean time, let the Spaniard and traitor vaunt of their ſucceſs, and we, her true and obedient vaſſals, guided by the ſhining light of her virtues, ſhall always love her, ſerve her, and obey her, to the end of our lives.

VOYAGE TO TERCERA, UNDERTAKEN BY THE COMMANDER DE CHASTE, GENTLEMAN IN ORDINARY OF THE KING'S BED-CHAMBER, AND GOVERNOR FOR HIS MAJESTY OF THE TOWN AND CASTLES OF DIEPPE AND ARQUIS.

[Tranſlated from the French in THEVENOT's Collection, Vol. IV.]

THE queen dowager being reſolved to oppoſe the expedition fitted out by the king of Spain againſt the iſlands of Tercera and Fayal, compriſing a great force in readineſs and properly equipped at Liſbon, and the different other ports ſubject to him, for the purpoſe of reducing the ſaid iſlands, remaining dependencies of the kingdom of Portugal, and poſſeſſed by the ſaid king for five or ſix years before in his right of a ſtrong and cunning neighbour: and Don Anthony, elected king of Portugal after the death of his predeceſſor Don Sebaſtian, having implored the aſſiſtance of the queen for a long time in his diſtreſſed ſituation, ſojourning for that purpoſe, and following up his entreaties in perſon at the court of the king of France; her majeſty promiſed to aid him for a valuable conſideration, truſting to the aſſurances which he gave her of the iſland of Tercera being able to defend itſelf, with a thouſand French againſt the army of the king of Spain, which he repreſented to conſiſt of five or ſix thouſand men at moſt; ſtating further, that there were ſix or ſeven thouſand fighting men belonging to Portugal on the iſland, commanded by his viceroy the count de Torrevedros, and five hundred French, who had ſtopped there the preceding year 1582, (after the battle of Mons. Stroſſy,) commanded by captain Baptiſta, an Italian and ſergeant major, and captain Carles of Bourdeaux. Beſides, he informed her majeſty that the iſland of Tercera was eighteen great leagues in circumference, that landing was very difficult, and that there were no more than three points of acceſs, which could with eaſe be fortified.

Her majeſty truſting to the truth of what his majeſty Don Anthony related, gave the command of nine companies of foot, and of the other French who were upon the iſland, to the commander de Chaſte, conſtituting him general, with order to repair to Tercera, and defend the place. After the ſaid commander had thanked her majeſty, he moſt humbly entreated her to reflect on the importance of the enterprize, which he did not eſteem of moment in reſpect to the riſque of his own life, provided he might be able to give ſatisfaction to her majeſty; this he conſidered difficult to effect, the voyage being precipitated at the inſtigation of a poor and paſſionate king, in deſpair of recovering his kingdom of Portugal, of which theſe iſlands were all that remained, and which he was deſirous of preſerving at the expence of the honour and blood of others, himſelf without experience of war. The commander entreated permiſſion of her majeſty to be allowed to embark alone in a ſmall veſſel, and to allow a delay until he could himſelf reconnoitre Tercera, in order to make a perfect report of its ſtrength, and the force it might require for its defence. Her majeſty conſidered this repreſentation as reaſonable, and agreed to the requeſt of the commander; nevertheleſs delaying his departure ſo long, that ſhe was informed of the embarkation of the Spaniards at Liſbon, and there being ready to ſail; which obliged the commander to proceed with all diſpatch to Havre de Grace with his nine companies, in compliance with his orders, to go on board, which he effected on the 17th May, 1583. On account of calms and ſtorms they had been 24 days at ſea, when at the diſtance of forty or fifty leagues off Tercera, he diſpatched a ſloop belonging to his fleet, commanded by Le Sieur Cuſſon, to reconnoitre, and ſee if the Spaniards had made themſelves maſters of it; and following

lowing the ſame courſe, he received certain advice that this iſland was ſtill free, and arrived the 11th day of June following in the port of Tercera, which joins the city; a large, open place. He was ſaluted by ſeveral pieces of ordnance and arquebuſes, and was received with great diſtinction by Mr. de Torrevedros, the viceroy, as well as the Portugueſe, who ſhewed great demonſtrations of joy on the occaſion of the arrival of the commander and his troops; the people exclaiming loudly, "*long live king Anthony, long live the king of France and the commander de Chaſte, who is come to ſuccour us.*" The ladies were ſeen at the greateſt part of the windows of the city, ſtrewing over his head abundance of roſes and other flowers, and coming before, threw orange flower-water in his face, ſaying, "*you ſhall be ſprinkled, ſince you are the friend of our good king Anthony.*" This was continued the whole length of this city, until he reached his abode. The poor French who remained there from the year before, were ſo much delighted at ſeeing them that they cried for joy, and came to embrace the knees of their companions and countrymen; for they were under apprehenſion of being confined to the iſland, where they lived but badly on account of the inconveniences they experienced of every deſcription.

Immediately after their arrival, they received advice from an iſland called the Peak, of the Spaniſh armament being ſeen, conſiſting of twenty-five ſail; Le Comte de Torrevedros came directly to the commander to conſult on what ſhould be done, and to propoſe to ſend three hundred men to the iſle of Fayal, where there was no more than one French company; to this propoſition the commander replied, that he truſted that to him, as he was beſt acquainted with that iſland, and of courſe knew what landing places it had, and what number of men were requiſite for its defence; giving, however, to be underſtood at the ſame time, that his orders were to defend Tercera. Upon this the count, reiterating his propoſitions, deſired the three hundred men might be ſent, as the iſland of Fayal was of the greateſt conſequence; ſince, if in the hands of the enemy, they might ſhelter their galleys there, and by that means be ſecure of capturing Tercera. At length it was reſolved, that captain Carles of Bordeaux ſhould proceed thither with four French companies, and one company of Engliſh; it was as well reſolved to retain the veſſels which had brought the commander; as much to make uſe of the ſoldiers and ſailors belonging to them, as to form a chain of the ſaid veſſels, traverſing the harbour of Angra, having noticed on their arrival the ſmall number of men there was for the defence of the iſland. This being done, he begged the count to accompany him to reconnoitre the acceſſible points of landing, to which he agreed, and they went together accompanied by ſome captains; upon their arrival they found, quite contrary to the ſtatement which his majeſty king Anthony laid before the queen of there being but three landing places, that is to ſay, Angra, Porto Indio, and Praya; that beſides theſe, there were a number of others which had been badly fortified, their intrenchments being made at too great diſtance from the ſea, and very weak; which was the cauſe of their ſeparating the men, in order to furniſh a defence at each of the places of acceſs, in the following manner: at Angra, captain Baptiſta with his company, conſiſting of 90 men, and that of captain Brevel of 80 men, and ſome Portugueſe, had to prevent a deſcent at Angra; and from Brazil to the forts St. Anthony and St. Michael, a full league and a half of ſpace, captains Bazet and Capen with their companies of 100 men collectively, and two companies of Portugueſe; at La Caſa de Salque, a quarter of a league from Porto Indio, and a mountain between, captain La Valade with his company of forty men, and a company of Portugueſe; at St. Catherine, a league's diſtance from La Caſa de Salque, and a great mountain between, captain Bourguignon and his company of fifty men, with two companies

companies of Portugueſe; at Port Piſcard half a league from St. Catherine, and another mountain between, very inconveniently ſituated, as it hindered the obſerving or hearing them if attacked, to afford them aſſiſtance, captain Grano with his company of ſixty men, and a company of Portugueſe; at St. Sebaſtian, half a league's diſtance from Port Piſcard, captain Louis with his company of forty men, and a company of Portugueſe; at Gilles Fernandez, a great league diſtant from St. Sebaſtian, and all of it acceſſible, captain Campagnol with his company of ſixty men, and three companies of Portugueſe; at St. Marguerite, a quarter of a league from Gilles Fernandez, captain Chouin with forty men, ſoldiers and ſailors, and two companies of Portugueſe; at Porto Martin, a quarter of a league from St. Marguerite, captain Campols with his company of eighty men, and a company of Portugueſe; at La Praya, which was the ſhore for the greateſt diſtance acceſſible, and where it was expected the enemy would land, and make an attempt, one league and a half diſtant from Porto Martin, the commander de Chaſte poſted himſelf, with the companies of Capios, Laſte, Armiſſac, Le Barre, and Lignerol; each of about one hundred men, and four companies of Portugueſe; at Villanova, one great league and a half from Praya, a ſergeant belonging to the company of captain Barre, with fifteen men; at Biſcuit, a league from the four rivers, and two landing places, half a league diſtant from each other, captain Armand with his company of ſixty men, the maſter of the camp with his company of ninety men, with the ſaid count and a thouſand Portugueſe, who were to follow the army in the vineyards which were at La Praya and Porto Indio, and captain Pomyne with his company of thirty-five men. Orders were iſſued that the ſailors ſhould be ſeparated as became neceſſary; and that ſixty of the beſt cavalry of the iſland ſhould repair to the commander at La Praga, to learn which would be attacked firſt; and that the ſloop belonging to the count, ſhould be ſent to ſpeak the iſland of St. Michael, kept by the Spaniards; this on its return brought intelligence, that fifteen or ſixteen large veſſels of the armament had been diſcovered; at the ſame time arrived one of thoſe belonging to the commander's fleet, which had been detained behind the reſt by bad weather at ſea. Upon its arrival, all the captains of the ſhips came to intreat the commander for permiſſion to return to France, as the whole fleet had arrived. This took place in the preſence of the count, who repreſented to the commander, that the forces brought to Tercera were not ſufficient to preſerve it, and that he proteſted againſt his granting permiſſion to the captains to ſail; they having diſcovered many landing-places, which had not before been attended to, and which they had neither leiſure, nor means of fortifying, ſeeing the Spaniſh army was ſo near at hand. The commander, having liſtened to theſe remonſtrances, would not allow the captains to ſail, but ordered them to ſtay the event, and land their crew; theſe, after ſome diſpute, agreed on obeying the order; ſo far from attending to their promiſe however the veſſels of Captain La Haye, that of M. de Sarlobut, the ſhip De Poupiere, and another called the King, ſet ſail, and departed without leave the next day. The commander followed them in a ſloop eight or ten leagues to ſea, and again ordered them in the king's name, and under pain of death, to return to the iſland for the need they had of them of importance to his Majeſty's ſervice; they armed themſelves, and replied to the commander by a refuſal, affirming that they would not be loſt, as he would, and thoſe who accompanied him, and were at Tercera, who, without doubt, in ten days' time would all of them have their throats cut; ſtating, that the Portugueſe themſelves would betray the French: they then begged him without aſſertion of authority to leave them, which, being powerleſs of forcing them to his orders, he did.

On his return he ſent another ſloop to ſea to reconnoitre, which diſcovered the whole fleet under ſail, directing its courſe towards Tercera; of which being informed, the count came to the commander at La Praya, and aſſured him that the Spaniſh fleet conſiſted of forty large veſſels, twelve galleys, two galleaſſes, and the remainder of ſmall veſſels or ſloops, making together a hundred ſail. The commander immediately went to reconnoitre the forts, which were along the ſhore of La Praya, and ſee if they were provided as he had ordered; when he heard the ſentinels, on the mountains, give ſignals of their ſeeing the fleet, by the ſounding of bells. Being returned to Praya, he learnt that the count had retired to Angres, which was his ſtation upon hearing the alarm.

The next morning, the twenty-third of July, the whole fleet was in ſight before Praya, at a league's diſtance, which continually nearing, coaſted along the iſland. The commander followed them as far as St. Marguerite, when they caſt anchor, keeping a quarter of a league from ſhore; before the galleys anchored, like their admiral, they came very near to a landing-place, where there were only a few Portugueſe, who fired a few ſhot at them. The commander du Mayet, being at hand with a ſmall number of French ſoldiers, advanced, and upon his getting up, the galleys retired, and captain Pomyet was placed at the ſhore, with his company of 30 men.

The Sunday following, at day break, the galleys approached La Praya very near to ſhore; and fired a number of guns and arquebuſes, at our trenches, ſending forward a boat to examine the landing-place; which came very near, as there was no moon up; on ſun-riſe, they returned to the fleet, and in the afternoon, they coaſted all along the Iſland again, to reconnoitre every place of landing; firing guns wherever they ſaw any people. The *Maitre de Camp* advanced, to ſtation himſelf with his company at the landing-places between Gillez Fernandez, and Port Peſcart. At two o'clock in the afternoon, a boat, with a white flag, was diſpatched from the fleet, towards the quarter where the commander du Mayet was poſted, who fired three or four guns at it, to prevent the recognizing of that landing place, which cauſed it to retire. The commander du Chaſte who had not yet obſerved the count make his appearance, ſent to tell him, that he looked upon it as extraordinary he did not join the army, and that both the Portugueſe and the French thought very ill of ſuch demeanor; that he begged him to join them, and to ſend the cavalry which was ordered to La Praya, and a different captain to that who commanded the Portugueſe, on account of their having no confidence in him, looking upon him either as a coward or a traitor, from his manner of behaviour; at the ſame time, to provide the ſoldiers with bread; for from the time of their arrival, they had had ſo little that they were half famiſhed.

The next day, which was Monday, all the galleys came before Praya by day-break, firing a number of cannon, and arquebuſes, and retired an hour after ſun-riſe, keeping cloſe to ſhore all day long to reconnoitre nearer; the commander followed them up to the fleet, meeting in the way John de Caſtres, a Portugueſe, whom the count ſent to command at La Praya, who delivered him a letter from the count, which he had received from the marquis de Santa Cruz, admiral of the fleet, by two Portugueſe of Tercera which he had made priſoners; this letter was faſtened to the neck of one of them, who ſwam on ſhore; a plan to which the marquis ſtated he had recourſe, as the governor would not allow a cartel to approach. The marquis, in this letter, endeavoured to perſuade the count to ſurrender the iſland to the king of Spain, to whom, he ſtated, it belonged, aſſuring him, upon his honour, of a free pardon on the part of his majeſty for his paſt diſobedience; in ſpite of which, his wife and children, who were priſoners

at Madrid in Spain, ſhould be delivered up to him, and be reinſtated as well as himſelf in all their poſſeſſions, and further, that his majeſty would honor him with valuable grants and employments: with reſpect to the French in the iſland, he would forgive them alſo, knowing well that they at all times were willing to adventure wherever a good opportunity preſented itſelf of making their fortune, and that he had in expreſs command from his majeſty, to furniſh them with three months allowance, and afford them a paſſage to France, in the ſhips which brought them; and although he had no doubt of the conqueſt of the iſland, he, nevertheleſs, to ſhew that his maſter was a prince both mild and benignant, on his part, made theſe offers with power in his hands.

As ſoon as the commander had ſeen the ſubject of this letter, he tore it in pieces without communicating its contents to any one, and in the evening, the count came to him at Praya with the cavalry, promiſing to ſend him ſixty horſes, which he did not do. Returning to his ſtation, he paſſed by that of the *Maitre de Camp*, and the commander du Mayet, who informed him, it was his opinion that the enemy meant to make an attack the next day on Porto Indio, or St. Catherine, where there were not a ſufficient number of people to prevent a deſcent, and beſeeching the count to ſend him the French ſailors who were at Angra, to place them: which he promiſed to do, aſſuring the *Maitre de Camp* and du Mayet, that he would proceed thither with four thouſand men. So far from acting thus, having met the ſailors on the road, he conducted them back to Angra, and no more was heard of him till the ſucceeding day, in the afternoon, the day of the battle. The ſame evening the *Maitre de Camp* and du Mayet, ordered captain Baptiſta to ſend his company to ſleep, to a mountain which was between St. Catherine and Porto Indio, to be ready to ſuccour either, as there might be occaſion; which he did not do, but went to ſleep at St. Sebaſtian, a league from the ſpot.

On the ſucceeding day, which was Tueſday, an hour before day, three galleys of the Spaniſh fleet came to La Praya, and fired ſeveral balls at a corps de Garde, where they ſaw a fire: in the mean time, the other galleys, with fifteen or twenty large boats accompanying each, approached to the ſhore of St. Catherine, where captain Bourguignon was poſted with two companies of Portugueſe, who took to their heels on the firſt diſcharge of cannon from the galleys; ſo that the ſaid Bourguignon remained with only fifty French ſoldiers belonging to his company. This ſmall force oppoſed the landing vigorouſly; thirty-five of his number were killed with the captain; his lieutenant and his enſign, with the fifteen men who remained, being wounded. The Spaniards landed at once ſix thouſand men, and the reſt of the army filed after them, to the number of fifteen thouſand, in ſuch excellent diſcipline, that their order of battle was formed immediately on landing, every one knowing his ſtation. Du Mayet arrived there, and captain La Grave, ſhortly after the *Maitre de Camp* beginning a ſkirmiſh; but were obliged to retreat for want of men. As ſoon as day appeared, the commander de Chaſte ordered captain la Barre to advance towards the army, expecting it was about to land, and at the inſtant he heard a cannonade on the ſide of St. Catherine, which cauſed him to proceed thence towards with his companies, making them march in ſight of each other; and continuing in this order along the ſea ſhore as quick as he could, to the place where the enemy was advancing, in order that, if the enemy were repulſed, he ſhould not have an opportunity of landing with his galleys in another quarter. At the head of his companies, he was informed, by a man on horſeback, whom he had ſent forward, that all the enemy had landed, and that, at a little village

cloſe

cloſe to them, ſeven or eight hundred muſqueteers and arquibuſiers were advancing to take poſſeſſion of a ſpring; theſe the commander determined upon charging, on coming up; which he effected with ſuch ſpirit with the four hundred men he commanded, that he repulſed them, and drove them back to a ſmall mountain, at the foot of which was the army in order of battle. More than four hundred Spaniards were killed by wounds of the ſword and halbert, and the *Maitre de Camp*, and du Mayet having rallied round the commander, the poſſeſſion of the mountain was much diſputed; and gained and loſt four or five times, the commander being, at laſt obliged to fall back, on account of the extreme inequality, there not being, at moſt, more than five hundred French, of which, already, a great number were either killed or wounded: the other ſoldiers, ſeeing the check they received, loſt their courage; as well they had had ſuch bad fare from the firſt appearance of the army, and were ſo much haraſſed with the diſtance and quickneſs of the march they had made, in view of oppoſing the deſcent; ſome having come one, ſome two, and ſome three leagues, the heat of the weather being ſo great, as to cauſe a number to faint by the way. The commander reſolved on regaining the before-mentioned mountain, and formed a battallion of his remaining men, attacked and drove the Spaniards from it, determined rather to die, than loſe again a ſingle foot of ground; his brave men being jealous of the fate of their companions and friends, whom they ſaw expiring at their feet, and pay their debt of nature, ſatisfied within themſelves that a ſimilar lot awaited them; ſeeing, as well, that the Portugueſe abandoned them, who formed their greateſt force; and without whom, the commander preſerved the mountain until night. From this may be judged, whether the French, in poſſeſſion of the advantages which the enemy enjoyed, would have been driven out in ſuch a manner. I do not mean, however, to inſinuate that there were not, in the Spaniſh army, a number of brave men and old ſoldiers; but, in good truth, they are prudent and cautious in their conduct; and knowing the nature of the French, who charge the firſt whether weak or ſtrong, they let this fume evaporate; which they cannot conſtrain without immenſe loſs to themſelves.

In the evening, and after all theſe engagements, the count arrived with a thouſand Portugueſe, and three or four hundred cows; and aſſured the commander, that the Portugueſe would fight with them, and that it would be advantageous; for on a former landing of five or ſix hundred Spaniards on the iſland, they were defeated by the cows, which had been enraged by goading. The commander in anſwer obſerved, that ſuch a manner of fighting was diſhonourable; that it belonged only to ruſtics and villains to uſe ſuch meaſures: that as well, they might do them more injury than benefit, if they were to turn on them, rather than attack the enemy; and that it would have been much more reputable of him to have been preſent at the landing and the battle, as he had promiſed, and his duty engaged him to have been, than to invent a cow-defence: that he was the cauſe of the loſs of the iſland, and the ruin of the French; but as the fault was committed, that he ſaw no other remedy, than for him, with them, to meet an honourable death, rather than ſuffer the cruelty which it was uſual for the Spaniards to inflict; for ſome time back on the French, as well in Florida, as on the occaſion of the voyage, and battle of Monſ. Stroſſy, and in other places, where they had broken their promiſes, and cauſed ſeveral French gentleman to be executed by the hands of the common hangman. The count, convicted of cowardice, confeſſed he was wrong; but that he could not go out to battle, begging the commander to excuſe him, ſaying that God had deprived him of all ſtrength and underſtanding; but aſſuring him he would make the Portugueſe go, whom he had brought with him, and that they ſhould die

die with him; and that, in the mean time, he would attend to matters for which he was better adapted, than to fighting. Seeing this, the commander reſolved on returning to battle, and aſſembled the remainder of his force.

Being advanced towards the enemy to engage him, the count informed him that it would be well to poſtpone his intention till the next day, for that night would be hurtful to himſelf as well as his people: upon this, the commander went to thoſe Portugueſe who pretended a diſpoſition to fight, and begged of them not to quit their ranks until the ſucceeding day, in the morning, till when the battle was put off which they promiſed; in the mean time, he went to look after thoſe who were dead, and the wounded.

Officers killed.—Captain Bourguignon; captain Armiſſac; captain Eſpalingues; the lieutenant and enſign of the *Maitre de Camp;* the lieutenant of captain Campagnol; the enſign of captain La Grave; the enſign of captain La Valade; the enſign of captain Baptiſta.

Officers wounded.—The commander Du Mayet; captain Brevet; captain Laſto; captain de la Barre; captain Louis; the enſign of captain Campagnol; the lieutenant and enſign of captain Bourguignon; the enſign of captain La Barre; the lieutenant and enſign of captain Loys.

Volunteers killed.—Meſſrs. de Montmurat, Mollin, and Beſſes.

Gentleman Volunteers wounded.—Cuſſon, Mailhames, Favet, Nivaudioux, Incantz, Villaubes, Taſcort, and Meremont, with many ſoldiers killed and wounded.

The commander remained encamped very cloſe to the Spaniſh army until one o'clock in the morning, by which time he was informed by the count, that the Portugueſe had broke their ranks, and had fled into the mountains, and that he adviſed him thereof, in order to deliberate on what to do. The commander aſked his advice; which was, that he ſhould retire to a mountain, by means of which a great part of the Iſland might be preſerved, and ſome proviſion and ammunition might be carried thither, with a train of cannon. The commandant replied he would conſult with his companions on the ſubject. He aſſembled them immediately, but the greater part were for their throwing themſelves into the fortreſs of Angra, ſending them the proviſions which were on board of three French ſhips in the harbour, joining the ſaid fortreſſes. He informed the count of this, who was of a different opinion; alledging that their fortreſſes could not contain more than two hundred men, and that they would be forced in twenty-four hours, and battered to pieces with cannon; and that he preferred his firſt recommendation of retiring to a mountain. By this he ſhewed the miſtruſt he continually entertained of the French, and the apprehenſion he was under, leſt they ſhould become maſters of the fortreſſes; which he confeſſed at his death, of which I ſhall have to ſpeak.

The commander being reſolved to be accompanied to the mountains by the count, about one in the morning he cauſed his troops to begin their march, and as he proceeded, upon enquiry for the count, he was not to be found, having departed without either having a guard or making a rendezvous. The commander did not, however, ceaſe to advance towards the mountain, endeavouring to overtake him, and conſult on what he had propoſed. An hour before day-light he found himſelf at a village called Noſtre Dame Dagar de Loup, where he was informed that the count had embarked in two boats, and made his eſcape. This cauſed the commander to reſolve on his firſt intention, of throwing himſelf into the fortreſſes of Angra. Being near, he ſent to reconnoitre them by a man on horſeback, who reported that the enemy were in poſſeſſion of them, the Portugueſe having carried them, the night before, the keys into their camp: this

this he learnt from a negro who had escaped from a Spaniard, and who was flying towards the mountains. The commander seeing himself deceived by the count, and by the Portuguese, of which not fifty would have fought, and serving only to nourish panic among the French, he reflected on the expediency of returning to the village of Nostre Dame Dagar de Loup, in order to entrench himself, and hold out with his troops as long as possible. Immediately on entering the place, he caused the men to begin working at the barriers and entrenchments, and assigned a station for his captains, where, by eleven at night, all the soldiers assembled, and began to make a noise, exclaiming in a loud voice. "*To arms, to arms, we must massacre our general and his captains, they design to save themselves, and leave us in pledge:*" and elected a chief to conduct them to the marquis de St. Croix with their colours, meaning to throw themselves upon his mercy. The commander upon observing this, left his apartment, entered the corps de Garde, where the soldiers were assembled, and enquired the cause of the noise. They told him they knew very well that it was his design to save himself with his captains, which he denied; he told them if he had been so disposed, he should have done so on the day of the battle; that he had had an opportunity, having been solicited thereto by captains Rosset, Chaurin, and Girard, of the marine, who were not then in want of boats; that they might enquire of them the answer which he had made them; which was, that he would rather plunge his sword through his heart, than be guilty of such a base action; that he would live and die with his companions. This the captains of the marines declared aloud; but "*I see very well,* said the commander, *that there are some cowards among you who have invented this tale in order to ruin us; some, who prefer dragging on a miserable existence in the gallies, which is the highest favour they can expect from a Spaniard, than to die an honourable death.* To satisfy them farther he swore to them, that he would either lose his life or place them at liberty, and that he would be the last to leave the island. The commander thinking he had reasoned with them enough, returned to his apartment; where a few hours after he heard a similar alarm; they had elected for their chief a serjeant of capt. Armissac's company, who exclaimed aloud, "*Let us, let us kill our captains, I shall now begin with mine,*" he at the same time presented the point of his halbert towards capt. Casson, who represented to him the consequences of such an alarm; but the commander caused the man to be hung on board of ship, on his return from Tercera, not being then enabled to punish him, on account of the cowards and mutineers being the most numerous; the greatest part of the good soldiers being either dead, wounded, or sick; nevertheless, he went from his apartment, and exposed to them their crime, in ruining themselves in such an infamous manner, and in crediting that he should make his escape; an action too detestable for any man of honour to follow, and which, in fact, were he so base as to intend, he had not the means of effecting; but to satisfy them entirely on that subject, he desired that forty or fifty of them should mount guard over him at the house where he lodged, with seven or eight of his wounded attendants. This was done, and the following day they went to fetch captain Casson, an Italian, whom, by entreaty, they prevailed upon to go to their commander, the general, to implore him to send to treat with the marquis de Santa Cruz, promising in case of a refusal to die at his feet, and give no more disturbance. The commander having heard this from captain Casson, answered that he was not disposed to be dictated to by such a set, that he knew very well what it was his duty to do; and desired him to assemble them together, which having been effected, he addressed them for the third time: Fellow soldiers—*I am sorely concerned that bearing the name of Frenchmen, you should have so little regard thereto, being no longer capable of bearing with your insolence, I am resolved, let what will follow, to chastise*

with

with rigour the firſt who ſhall again evince any ſuch mutinous diſpoſition, and ſeparate thoſe ſoldiers who behave with propriety. Theſe he promiſed on his life and honour he would never abandon, but die with them; ſtating at the ſame time his willingneſs to allow any who had not courage enough to follow him to battle to declare themſelves, and allowing ſuch the liberty of going wherever they pleaſed. Upon this they exclaimed aloud that they would never give him again any cauſe to be angry but would follow his orders.

Towards midnight on the ſame day, which was Thurſday, the commander was informed that a Spaniſh ſoldier had arrived at the firſt barrier of the village bringing a letter from Don Pedro de Padilhe, and Don Auguſtino Inique, *Maitres de Camp* of the Spaniſh army, which he ſent for to the barrier, not being willing to ſpeak to the Spaniard. The ſubject of this letter was, that the ſaid Padilhe and Inique being convinced of the extremity to which the commander was reduced, and the riſk he ran of his life, had begged the marquis de Santa Cruz to have it preſerved, which he had promiſed them; and as they were his friends, and had noticed his bravery, and that of his companions on the day of battle, they gave him intelligence of this in order that he might not refuſe the proferred courteſy. The commander gave for anſwer verbally, by the means of one of his captains, who bore it to the Spaniard at the barrier, that he was much obliged to thoſe gentlemen, who were more concerned for his life than he was himſelf; that it was not in ſo much danger as they imagined, but if it were loſt with thoſe of his companions in the ſervice of the king his maſter, he ſhould conſider it well expended, but at any rate they ſhould not be cheaply bought. And although the commander was under great affliction from having no other means of ſupport than water, which ran in a brook acroſs the village, and ſcurvy green pears, on which they had already ſubſiſted for eight or nine days, very little ammunition, and few ſoldiers inclined to ſuffer more hardſhips with himſelf and his companions, a good part of his beſt men being dead, wounded, or ſick; nevertheleſs he would not liſten to any capitulation, without firſt conſulting with the chief Portugueſe captains, who were in the mountains, and learning from them, whether, after the fault they had been guilty of, in abandoning him in the battle, who had purpoſely come to riſk his life, and that of his companions, for the preſervation of theirs, their property, and their liberty; their courage ſhould have returned, in which caſe he was perfectly ready to meet the enemy afreſh, from whom they had as little mercy to expect as the French, informing them at the ſame time, that a capitulation was propoſed to him, which, however, he would not give ear to, provided they determined upon an honourable death with himſelf.

Inſtead of anſwering the commander, they ſent his letters to the marquis de Santa Cruz, to whom Franciſco Diez, one of the principal Portugueſe captains wrote as well that he was the humble ſlave and ſubject of king Philip, and that if he had not declared as much before, it was for want of knowing his right to the kingdom of Portugal; but that if his ſervices were acceptable, he would come and join him with his Portugueſe, and would act againſt the French who had ſolicited him to join them, that he would make a priſoner of the count de Torrevedros, who was wandering about the mountain, his boat in which he had attempted to ſave himſelf being wrecked. In the interim, the commander received a ſecond letter from Don Pedro de Padilhe, and Don Inique, in which they complained of the commander not having returned a written anſwer, and ſtating their ſurprize at his reſolution of ſo unadviſedly loſing his life, ſince having no means of ſerving his maſter by that ſacrifice, he could acquire no great honour by it; that knowing his merit they were much concerned in his fate; and entreating him if he had any regard for himſelf, he would ſend ſome gentlemen of his party to treat of a capi-

tulation, before as were the marquiſs's orders, the army was put in motion to overwhelm him. The commander, in rejoinder, informed them, that his reſolution had only encreaſed, and ſought them not to trouble themſelves further with attempts to perſuade him, as he would not liſten to them; telling them, if they ventured to aſſail him, and his companions, he would make them ſee in a different manner to what they had yet done, the valour of his Frenchmen, and how willingly they devoted themſelves to death, which however would not take place without their firſt rendering eſpecial ſervice to his Majeſty in ſpite of any ſuggeſtions to the contrary. This however was but as is ſaid, a good countenance with a bad hand. In the mean time the commander was told that the count was on the mountain, his boat having been deſtroyed on his attempting to ſave himſelf, and that the Portugueſe were in ſearch of him, on account of his having rendered them cowards, and engaged them to abandon the French in their diſtreſs: he requeſted him to furniſh them with bread and ammunition, aſſuring him that although the Portugueſe ſhould not liſten to his repreſentations, engaging them to join him in battle; he would yet rather die than capitulate to the Spaniards, from whom he looked for no mercy. In his anſwer the count begged to ſpeak with him, requeſting that he might not allow the French in his way to behave injurioufly towards him, which he was greatly apprehenſive of. This the commander promiſed, notwithſtanding he had more cauſe to ill treat him than to receive him. On his arrival, when paſſing by the French, they exclaimed. *Look at the coward who abandoned us, and who is the cauſe of all our misfortune, kill him, kill him.* The count upon this crying bitterly, covered with ſhame for his behaviour, addreſſed them thus: *Frenchmen, brothers, and friends, you have juſt reaſon to take away my life, but before hand, in the name of God, I beg your forgiveneſs.* The commander hearing this exclamation from his houſe, which was adjoining, ran out, and touched with pity at ſeeing a viceroy on knees, imploring his life from Frenchmen; he commanded them to be ſilent, and not to ſpeak a word which might hurt his feelings. I can ſafely affirm that there was not a brave man preſent, however much he might ſuffer from his conduct, who ſeeing him in this condition, did not pity him, notwithſtanding his previous want of courage. He informed the commander that there were no means left of furniſhing him with other proviſions or ammunition; that he had been ſix weeks without taſting bread, and abandoned by all his people; but if he could come to any terms he would do well to accept them in his diſtreſſed ſituation; in that caſe, he humbly beſought him that he might be included, and his life ſaved. The commander replied, *It would be to me a double calamity to keep remembrance of you, conſidering the little title you poſſeſs to my notice from your conduct; nevertheleſs if it be poſſible it ſhall be done.*

At this inſtant he was informed by ſome of his captains, that ſixty of the poltroons who had been mutinous, had deſerted to the Marquis de Santa Cruz; and that the reſt were inclined to follow their example, and were throwing their arquebuſſes and corſlets over the walls, breaking their ſwords, and ſending aloud to the devil their fathers and mothers, who had brought them into the world to ſuffer ſuch calamity, crying out—*Let us go to the galleys, is it not better than to be hung, or killed; we are all loſt, and our General refuſes our lives when they are offered us.* The poor fellows who were wounded hearing the cries of thoſe cowardly ſcoundrels, and foreſeeing that their diſloyalty would involve and bring to a miſerable end the better ſort among them, loſt all hope, and hearing on all ſides, *to arms, to arms, the enemy;* they looked upon their companions who were paſſing by, and unable themſelves to move, exclaimed, *Alas! is there none among you who will put an end to our miſeries, by the means of a ſhot a piece, and prevent the Spaniards from exerciſing their cruelty upon us.* The commander ſeeing this, and the

the little hope there was of receiving ſuccour; that a part of his men had already ſurrendered, and given account of his diſtreſs; the greater part of thoſe remaining being ready to do the ſame; ſome dying of hunger and thirſt, and the wounded for want of being dreſſed; ſome of the ſurgeons having gone over to the enemy, and the others having loſt their unguents; he aſſembled his captains, who entreated him to propoſe terms, and preſerve thoſe who were dying hourly to no avail, and this being reſolved upon among them, and hearing from a particular friend, a knight of Malta, who was with the army, that the enemy was in motion to force his entrenchments, and who entreated him to have ſome pity on him, and ſend immediately a perſon to treat: they choſe the commander, Du Mayet, for that purpoſe, who having proceeded to the Spaniards, made propoſals as advantageous as if we had been on equal terms: he was, in conſequence, ſent back again by them with deriſion, without any other anſwer than that it was a great folly and a temerity on the part of the French, whoſe lives were in their hands, inſtead of humiliating themſelves to aſk for them, and render at diſcretion; to propoſe to make the boldeſt and beſt conditions. They ordered the commander, Du Mayet, to withdraw immediately, and informed him he ſhould have a reply to his impertinent requeſts, carried by fifteen thouſand fighting men. Notwithſtanding this, Don Pedro de Padilhe did not diſcontinue writing to the commander De Chaſte, but acquainted him that having ſent one of his officers who had no reaſon in his propoſals, he had conſequently returned without concluding any treaty, which from the affection he bore towards him, and the regard he had for his life, he had hoped would have been concluded; that the Marquis de Santa Cruz had begged and forbid his people to ſpeak to him any more about capitulating with the French, as he would ſee the end of them for their obſtinacy; however, that if he would immediately ſend ſome other perſon, more yielding than the commander Du Mayet, the whole company of Spaniſh Cavaliers would entreat the marquis to liſten to him; that he had foreſeen that his reliance upon the cowardly Portugueſe coming to rally about him, would be the cauſe of his loſs; and that he had nothing to expect on that ſcore: for the purpoſe of certifying as much to him, he ſent him the letter which the commander had diſpatched to the Portugueſe captain Franciſco, which had afterwards been ſent by him to the marquis, accompanied with an offer of his ſervices to ruin the French; that he committed himſelf much in courting that wretched race, having been already deceived by them; and which if joined to his force could not prevent his ruin. Hereupon the commander having communicated with his captains, ſelected M. Angernaques, *Maitre de Camp*, to whom he gave full power to treat of his ſurrender; he immediately departed, and his arrival cauſed the army to halt, which was on its march from the city of Angra, to force the French entrenchments; and although M. Angarnaques required ſeveral things which he had no hopes of obtaining, he, nevertheleſs, with great difficulty, concluded the following treaty. 1, That the ſaid marquis promiſed the ſaid commander and his people ſhould be allowed to return to France with their ſwords. 2, That he would hire veſſels, properly victualled, for their tranſport with their baggage: (which would not much encumber the backs of the French, they having loſt every thing; preſerving no more than the cloaths they had on on the day of battle.) And 3, That the ſaid marquis, on account of the doubt entertained of his faith, ſhould ſwear upon the Holy Evangeliſts, to obſerve the treaty which he ſhould ſign, with the principal officers of his army. This was done, and theſe articles agreed to and ſigned, were carried to the commander, who was on his way with his troops towards Angra, where the ſaid army was. At about a quarter of a league he was honourably met by the moſt conſiderable officers, and aſſured by the before mentioned Padilhe, on the part of the marquis, that he might

now eſteem himſelf among his moſt faithful brothers and friends. They gave him a horſe, as he was on foot at the head of his troop, and cauſed ſeveral gentlemen who followed the commander to mount behind them on their horſes, proceeding to the city, where quarters and proviſions for the French were already provided, the ſame as for the Spaniards. The commander rode on direct to the houſe of the marquis, who received him with great politeneſs, obſerving to him afterwards, that he was ſurprized that a man of his quality, and ſo brave, ſhould have ventured himſelf in a place ſo diſtant from his own country, and with ſo little hope of preſerving it or even his own life and honor, being accompanied by ſo few men; and to aſſiſt the moſt contemptible nation upon earth, the Portugueſe; by the anſwer of the commander underſtanding that he was greatly afflicted, and hurt at his fate, as he told the marquis; that had the repreſentations made by the king Don Anthony to the king his maſter, and the queen mother been true, his enterprize would not have met with ſuch an adverſe deſtiny, but that he ſhould have hindered the landing, and taking of the iſland; as he would yet have done if the galleys had not reached the coaſt, where, Don Anthony had aſſured them, there was not depth of water for them to navigate, and the Portugueſe had not abandoned him; and that he lamented exceedingly that he had not died in the engagement, and ſo been ſpared the misfortune which had befallen him, which would be a ſubject of affliction to him as long as he lived; the marquis obſerved: *In good truth Mr. de Chaſte it would be doing too much wrong to the French nation not to allow their high courage and valorous enterprize, but you muſt grant that they are frequently inconſiderate, and too haſty, as I ſhould eſteem them to be in this inſtance, but for the apparent reaſons which you alledge; what, however, ſurprizes me is to hear you miſname good fortune bad; for as you were deceived in the principal point of your intention, which is no fault of yours, this I conſider alone as your misfortune; on the other hand I eſteem you very fortunate to recover what was loſt, that is to ſay your lives, and bearing away only great renown acquired among us, as we have been witneſſes that you and yours have done even more than your duty, on as well the day of landing, as in having fought furiouſly with but a handful of men for a whole day againſt ſo large and ſtrong an army, ſhewing nothing in your ranks but a contempt of death; you ought therefore to rejoice, and conſider that never before did any cavalier of your nation effect ſo much for obtaining a favorable reſult to ſo perilous an undertaking, or was more remarkable in his return to France.* He ſpoke in exemplification of ſeigneur Stroſſy and his army, the expedition of the French to Florida, not one in which eſcaped, and ſeveral other battles, where they had been worſted, not for want of valour, but from bad conduct and bad plans. After this long converſation, ſupper time came on, and meat was brought on table, with which the gentlemen who accompanied the commander were very well ſatisfied, deſiring nothing better than to ſet their teeth to work, whatever the ſubject of diſcourſe; however they did not ſup at the marquis's, each of the Spaniſh officers taking one by the hand, and conducting them to their quarters, where they treated them (at leaſt apparently) with much good will, and where they ſupped without waiting for ſauce. The commander, after ſupping with the marquis, by whom he was again aſſured of a faithful obſervance of the treaty, and that they ſhould ſpeedily be embarked to return to France, wiſhed him good night, and withdrew to the apartments of Don Pedro de Toledo, ſon of the former viceroy of Naples, a very civil and brave cavalier, who ſhewed great politeneſs and kindneſs towards the French.

The next day the marquis publiſhed a law, forbidding throughout his army, that any one, of whatſoever rank or quality he might be, ſhould dare to moleſt any of the French, whether by words or otherwiſe, under pain of death; and as well that who-

ever ſhould bring him the Count de Torrevedros, who was in the woods of the mountains, whether dead or alive, ſhould receive five hundred ducats, the commander not having been able to include him in his capitulation, although he had endeavoured to do ſo more out of commiſeration than from his deſert. Immediately the Spaniſh ſoldiers, fond of money, began forming into parties to go to the mountains in ſearch of the count, being no longer afraid of the French as the treaty was ſigned, and having very little regard for the Portugueſe: a corporal and eight of his companions proceeded thither, and on the ſkirts of the wood at the foot of the mountains, perceived a negro, who ran away from them; he ſpurred on his horſe, purſued him, and ſeizing him by the collar, his ſword in his hand, and ſwearing, ſaid, *if you do not inform me where the count is, I will certainly kill you.* The negro, being afraid of his fury, confeſſed to him that he had been his groom for eight years, and that he had left him in a cavern, where he had reſided ſeven or eight days, entirely abandoned by his gentlemen and domeſtics. The Spaniard made him get up behind, quitted his companions who were on foot, and purſued his way towards the count, who at that inſtant came out of his cave to ſee if his negro was bringing him ſome bread, as he had promiſed him. The count had no other dreſs than that of a country perſon, and a wallet faſtened to his neck; the corporal, who had no knowledge of him, and obſerving his miſerable appearance, and that he was drawing back, cried out to him, *here my good man, ſpeak to me and fear nothing.* The count approached, his hat in his hand, not having been able to regain his cavern, and ſaid to him, *What do you want ſir? Are you not,* ſaid the corporal, *one of thoſe dogs of Portugueſe who fought againſt us? I cannot deny,* ſaid he, *that I am a Portugueſe, but I am a poor wretch, who by my labour maintain my wife and children on this miſerable ſoil, and have no concern with war.* The corporal then obſerved, *I ſhall not ſay much, but if you don't immediately ſhew me the place where the count is concealed, you ſhall die by my hand.* The other being a party concerned, obſerved to him, *ſir, you may do as you pleaſe; as to ſhewing you the count it is impoſſible, for it is a long while ſince I have ſeen him.* He held a ducat in his mouth to prevent thirſt, on account of the extreme heat, and the diſtreſs in which he was; perceiving this, the corporal aſked, *what is that you are rolling about in your mouth?* He anſwered that it was a piece of gold which was all he was worth in the world, with which he wiſhed to buy bread at ſome of the houſes in the mountains, to carry to his children, whom he had not ſeen ſince they landed in this country, and that he was dying with hunger. The corporal took the ducat, and rummaging him, aſked him, if that was all he had. *O yes ſir,* ſaid the count, *and I have had it more than fifteen years; but for the love of God give me ſome piece of money: Go along you raſcal, I ought to take away your life,* ſaid the Spaniard, and went his way. The negro who was behind to apprehend his maſter, was fearful he would be killed, and ſeeing him in this miſerable plight, and repreſenting to himſelf the kindneſs he had ſhewn him, was moved with pity, and the tear ſtanding in his eye, he pretended not to know him; but the corporal going into the woods, ſaid to him, *What, you poltroon, will you make me ride about all day long without bringing me to this cavern? I ſee that you are tired of living, but I ſhall do for you preſently.* Then placing his hand on his ſword, the negro exclaimed; *forgive me ſir, you have juſt left him, but I could not point him out to you I was ſo much affected. How,* ſaid the corporal, *is it poſſible it could be that man who looked ſo mean?* When galloping back, and finding him in the filthy entrance of the cave, he ſaid to him, *hollo, father, take back your ducat, I have not the conſcience to deprive you of it.* The count then approaching, held out his hand to receive it, which was ſeized by the corporal, who made him a priſoner in the name of king Philip. *Wretch,* then exclaimed

he,

he to the negro, *you have betrayed your maſter; but I don't complain; I was but too well aſſured that I muſt loſe my life, having already loſt my judgment and my courage.* The Spaniard grumbling, ſtruck the negro from behind him by a ſtab he gave him in the breaſt, of which he died, and placed the count in his ſeat, whom he carried before the marquis, who received him with very rude language, and ſent him afterwards on board the great Galleaſs, belonging to the fleet, where he was cruelly treated in order to extort confeſſion from him of what were the plans of king Anthony, and thoſe on the continent in Portugal; condemning him afterwards to be beheaded, and inſtantly executed, in ſpite of the interceſſion in his favour made by the moſt conſiderable perſonages in the army, who were related to him; and were deſirous of ſaving his life, to the marquis of Santa Cruz; but his council were of opinion that their prayers ſhould not be granted, on account of an anſwer he had ſent to a letter which the king of Spain had addreſſed to him, to entice him to join him with fair words and promiſes; "*that he would rather do homage to the devil than to ſuch a perfidious tyrant.*" At length he died as a good Chriſtian ſhould do, with ſo much reſolution, that he might have been taken for one of the braveſt of men, confeſſing, as I have before ſtated, that he himſelf had been the cauſe of the loſs of the iſland, and the ruin of the French, beſeeching the marquis to reſpect the engagements he had entered into with reſpect to them, and to treat them as men of honor, ſuch as he had always found them. The whole of this ſpeech was made in preſence of the Spaniſh army, with a ſmiling countenance, and with great collectedneſs, ſo much ſo that the French were aſtoniſhed, having witneſſed his want of courage on emergency, and were extremely affected at beholding him led forward with ſo much brutality, in a wretched dreſs; having been accuſtomed to ſee him treated with honor and reſpect by his own people, as well as by the inhabitants of the iſland, in as great a degree as if he had been their king; being ſerved at table in a moſt honorable manner, his gentlemen and domeſtics remaining always bareheaded, and preſenting him to drink kneeling, with a golden ſalver held below to catch what might fall from his glaſs; nevertheleſs all his grandeur did not prevent a death ſo odious in itſelf, and ſo diſtreſſing to the French, whom he ever reſpected, and promiſed to aſſiſt in a manner the Almighty did not allow him means to effect.

Six days before the capitulation, Don Pedro, ſon of the late viceroy of Naples, was commanded to beſiege the iſland of Fayal with three thouſand Spaniards, where a Portugueſe captain commanded, accompanied by four hundred French, with captain Carles of Bourdeaux at their head. Don Pedro embarked aboard the galleys and ſome large veſſels, and the ſucceeding day, after reconnoitring the iſland, eaſily effected a landing at the quarter where were the Portugueſe, who played the ſame game as at Tercera; running away to the mountains: nevertheleſs the French, ſeeing the landing effected, and the retreat of the Portugueſe, reſolved to fight and die: they ſhortly cut the throats of fifty or ſixty Spaniards, who had gained a fort on the ſhore, and from that quarter attacked the van of the large body led on by Count Pedro, where they had not much ſucceſs on account of the inequality, being repulſed, fighting all the way, to a fort they had conſtructed in the mountains, where they capitulated upon the ſame conditions as their companions at Tercera, to which place they were carried by the ſaid count, and treated in the ſame manner as the others.

Upon their arrival, the commander de Chaſte entreated the marquis to fulfil the conditions of the capitulation, and furniſh him with veſſels and proviſions for tranſporting him to the coaſt of France, together with his people, which the marquis pro-

miſed ſhould be done on the ſucceeding day. The next day the marquis ordered Don Pedro de Padilhe to tell the commander de Chaſte, that he muſt proceed with his people to Liſbon, where he ſhould be embarked for France, as he had not the power of forwarding him from there, not having a ſufficient number of veſſels to tranſport his army back; with this the commander was obliged to acquieſce, in ſpite of all diſpute to the contrary. However, while waiting from day to day for the departure of the army, he was informed by ſome of his captains, that the Spaniards endeavoured to ſeduce them to join them, with their troops, in order to be preſent at a battle which the king Philip meant to give the moors at Larache, where Don Sebaſtian was killed four years before, and loſt the day. On the ſame day the commander being invited to the quarters of Don Pedro de Toledo where the principal captains of the army were aſſembled, was repeatedly preſſed to be gay, and enjoy himſelf, on account of his appearing ſad and caſt down at his bad fortune; upon which ſubject, Don Lopez de Foulquoal, *Maitre de Camp*, general of the army, thus expreſſed himſelf: *Monſ. de Chaſte, in my opinion, you have no reaſon to grieve in the manner you do; ſeeing that, in this inſtance, nothing has occurred but what has been advantageous to you. I will refer the ſtatement of your adventures to the judgment of the moſt experienced warriors in the world; I am certain, upon explaining every circumſtance, that they can form no other idea thereof, than ſuch as is entertained by myſelf and my companions; which is, that although you ſhould have had all the good fortune poſſible againſt us, you could not appear in a braver or more honourable light, nor better have ſignalized your renown than you have done, in having fought with, and kept a whole ſtrong and numerous army employed for an entire day, with ſuch a handful of men, who cheerfully expoſed themſelves in the fight, with fixed arms advancing to give a ſhock to our ſoldiers, and meeting their ſteel with reſolution, to bathe their own in the blood of ours; killing a great number of our braveſt men, notwithſtanding your being abandoned by the Portugueſe, and their chief, with ſome of your own deſerted from you to us, informing us of your diſtreſs; in this poſition, engaging the marquis de Santa Cruz to enter into terms with you, notwithſtanding the information received of your being a prey to thirſt and hunger, which were deſtroying your people, and ſaving your lives from abſolute condemnation; for my part, I think we were too eaſy, that it would have been an eternal affront and ſtain upon the honour of our nation, if we had had the diſgrace to have granted beyond what we have done; and that you have to thank God for the aſſiſtance he has afforded you, and that you are at preſent in the hands of men of honour, from whom you receive every courteſy you can deſire.* The commander thanked him very humbly for his politeneſs, and ſaid: *I ſhould be the moſt ungrateful of beings, if I were not to ſhew proper ſentiments, when opportunity may offer, for the honour and kindneſs ſhewn me: but as the French are incapable of concealing what is uppermoſt, as in the inſtance of myſelf, I ſhall freely obſerve, that all the careſſes and kind treatment ſhewn us, are done with a deſign of which I cannot approve; what, for two days back, has given me greater cauſe of vexation, is the hearing that your captains were ſeducing my and their men to go to the battle of Larache; which I give the more credit to, from the marquis having already begun to break the treaty of capitulation, putting off the embarkation of my men for France, which ſhould have taken place from this iſland to Liſbon; which is done more to induce us to make a party in this battle, than from any want of veſſels, as he ſays; or, if this be not the cauſe, it is for the purpoſe of playing off ſome villainy upon me and mine; breaking his engagements entirely. He is not, however, to conceive, that although I ſhould be forced to go to Liſbon, I ſhall the more be perſuaded, either willingly, or by conſtraint, to go to the ſaid battle; for, rather than do ſo, I would ſtab myſelf in fifty places, as I am ſure would all my companions, except we were ordered to proceed, by the king my maſter; to whom I ſhall go to render an account of my*

conduct.

conduct. To loſe one's life or fortune, I conſider but little; not ſo of my honour, which would be forfeit, were I to act otherwiſe; or elſe the circumſtance would ſerve to immortalize the want of faith of Spaniards, in ſhewing that a general of an army with all the principal men of your nation, were devoid thereof, as you are in the fair road to demonſtrate. Upon this, they all anſwered: *Monſ. de Chaſte, you do us an injury in entertaining ſo bad an opinion of our faith; do not, for an inſtant, imagine unleſs it be by voluntary conſent of yourſelf, and your people to accompany us to the glorious battle of Larache, where every good chriſtian ought to be preſent to oppoſe the infidels; that the marquis would on any account oblige you, nor even break his treaty with you; and if he ſhould be ſ diſpoſed, our honour is ſo precious to us, we would rather forfeit our lives, than ſuffer him to do ſo.* After this they immediately waited on the marquis, to whom they repeated the obſervations made by the commander, on his want of faith, in taking him to Liſbon after promiſing him ſhipping from Tercera to return to France. They repreſented to him, that if ſuch were his intentions, the commander would have cauſe to complain; and that he would compromiſe not only his own reputation, but that of the whole Spaniſh nation. They beſought him to keep his faith and promiſe, and ſhip the French from the iſland, before the Spaniards ſailed: which the marquis agreed to do, upon condition that the commander ſhould leave le Sieur d'Anguaraques, the *Maitre de Camp*, with four captains and their companies; not being able to embark the whole for want of veſſels. The commander, upon learning this, repaired to the marquis, and told him, that in the capitulation no mention of hoſtages was made; that ſuch conduct was a retractation of promiſe; and that, if he by force or authority ſhould be conſtrained to abide by thoſe conditions, it ſhould be himſelf who would remain as an hoſtage, and make good his retreat, running his chance. The marquis anſwered: *Monſ. de Chaſte, leave me the hoſtages I have required; I eſteem you too much to conſent to your ruin, as I ſhould do, if remaining as an hoſtage, you were to anſwer for the diſorder which your ſoldiers might be guilty of, on paſſing through the territories of the king of Spain my maſter, from bad conduct: you muſt embark tomorrow with your people, in three Biſcayan veſſels, each of four hundred tons, and a bark for your ſick and wounded; theſe ſhall be at your diſpoſal, with proviſions and people to conduct you to the French ſhores in the neighbourhood of Fonterabia; and as ſoon as I hear of the treatment which the ſaid Biſcayans may have received, and of their arrival in port, I will not fail to ſhip the remainder of your people, which however, I ſhall take to Liſbon: this is all I can do for you; and on which I am reſolved. Very well,* ſaid the commander, "*the ſtrongeſt, as you do, make the law, ſir.*" When taking leave, he aſſured him of ſailing with his people.

The next day which was Saturday, 14th Auguſt, they went aboard in ſuch confuſion, that the veſſels were full of French ſoldiers or ſailors, and a great number were concealed belonging to the companies which remained as hoſtages, being apprehenſive that this would be their laſt chance; which was the cauſe of a greater part dying of hunger and thirſt, or the bloody flux at ſea, as we were two months on the voyage which we reckoned upon effecting in a fortnight, if the wind had been favourable; but being contrary, and the veſſels bad, we were in danger of foundering on Tueſday the ſeventeenth of the ſame month, and the men were conſequently ſo much affected, that ſeveral dead were thrown into the ſea, the remainder being very ill of the bloody flux; the conſequence of the diſtreſs they had to combat with in the mountain of Tercera, before the capitulation, and on board continuing to live ſo wretchedly, that they had nothing to drink but a ſmall ſour wine, ſtinking water, broken biſcuit made four years before at Milan, hard as a ſtone, and half worm eaten, and ſome ſpoilt ſalt fiſh; ſo that the beſt entertainment the poor fellows who were ſick and wounded

wounded could obtain, was a piece of biſcuit boiled in an earthenware pot in ſtinking water; and of this ſo ſmall a quantity, as ſcarce to be perceptible when ſwallowed. This cauſed ſo great a mortality that more than two hundred periſhed. Tueſday, twenty-fourth of the ſame month, the veſſel, on board of which was the commander, was near ſinking, owing to the deſperation of a ſailor, who, lying under the cabin either vexed at living ſo miſerably, or in anguiſh from the pain he experienced from a ſhot which had broken his leg, forced open a plank of the veſſel; in which there was already two feet of water, and but for the aſſiſtance of the ſailors who perceived the leak, the veſſel had been loſt. The ſame veſſel, the next day, was a ſecond time in danger from fire, which the French ſailors, running to the part where ſome drunken Biſcayans had been regaling themſelves, extinguiſhed; theſe latter were accuſtomed to cook and enjoy themſelves in preſence of the poor French, who with joined hands, at times, would entreat a morſel of them for the love of God, which they paid ſmall attention to, mocking their diſtreſs; and frequently, on paſſing by them, would give them kicks in the belly and the reins, telling them they were dogs and ſwine to have blood voided by them below.

How the poor ſick were treated, who died while lying one upon another in every corner of the veſſel, without being able to move, or help themſelves, may be imagined. Frequently ſpeaking of the moſt wicked nations, I have heard them compared to the Biſcayans, but from experience I can affirm that they are the moſt barbarous and leaſt friendly people upon earth: the commander was even informed one day that the Biſcayans had thrown a French gentleman overboard, who was yet alive; and having noticed this to the captain of the ſhip, as well as the reſt of their bad conduct, he anſwered him that he was ſo much hurt at having to carry people ſo much afflicted, as were the French on board his ſhip, that he wiſhed the devil might ſink her, with all that ſhe contained: notwithſtanding this inſolence, the commander armed himſelf with patience, in conſideration of thoſe who remained as hoſtages behind, who might ſuffer for any puniſhment inflicted on this wicked Biſcayan and his companions, which the commander had yet the power to inflict.

Friday following, the twenty-ſeventh of the ſame month, they began to diſcover the ſea-coaſt of Gallicia, where being deſirous of touching at Cape Finiſterre, to take in water at the neareſt village, ſuch a violent ſtorm aroſe that moſt of the ſailors prepared to throw themſelves overboard, in order to ſwim to ſhore, but God calmed the tempeſt, their veſſel paſſing within a foot or thereabouts of the rocks. During the whole day they were unable to make the land; but the next day they caſt anchor in a bad road of a village called Maujy, where ſeveral Frenchmen thinking it a remedy for their ſickneſs, went to drink at a ſpring, and after filling themſelves four or five died upon the ſpot: on this account the commander cauſed them to be re-embarked. A great number of the ſoldiers, upon returning on board, beſought their commander to diſcharge them, and in order to obtain their requeſt the more readily, they pretended to have made a vow to go to St. James's of Gallicia, ſix or ſeven leagues diſtant, in order that they might be out of danger. The commander repreſented to them their bad health, and the riſque they ran in paſſing through Spain, of being knocked on the head, that it would be much better to wait two days longer, in which time it was to be hoped the N. E. wind, which prevented the continuance of their voyage, would change, that in that caſe, in twice twenty-four hours they might run 160 leagues, which was our diſtance from the French coaſt, which by land it would take them two months to travel over: he aſſured them further that in caſe the wind ſhould not become favourable, he was reſolved upon running the ſame riſk as themſelves, being thereunto

obliged from the ſcarcity of proviſion, which was ſo great, that the portion of each ſoldier was reduced to about as much of ſtinking water as could be contained in the hollow of the hand, and about the ſize of a walnut of biſcuit per day. But the commander being importuned to diſcharge them, gave his conſent for that purpoſe to one hundred and twenty, the greater part of whom died in Spain, owing to the bad treatment they received, or the illneſs under which they laboured.

Tueſday, ſixteenth of the month, the contrary wind appearing to change, gave an opportunity for weighing anchor, and ſetting ſail, after the captain had put ſeven or eight caſks of water on board; but in leaving the roads a fog aroſe, accompanied by a great ſtorm which ſhattered the main maſt, and ſhivered all the ſails in ſuch manner, that we all imagined we were at the end of our afflictions; on this occaſion the Biſcayan captain ſhewed the baſeneſs of his ſoul, and his avarice; for full of rage he exclaimed, *O God! wilt thou at laſt make me loſe my dear ſhip which coſt me ten thouſand franks; rather than ſo, let the devil take me.* On this occaſion, all the others aboard invoked the aſſiſtance of the Almighty, who again preſerved them from this misfortune, and quelled the ſtorm; which ſeparated the two other veſſels and barks from the commander, and drove them, the commander Du Mayet, who was in one, into Valentia, in Spain; thirty-ſix leagues diſtant from the commander; captain Carles, of Bordeaux, to the iſlands of Bayonne, twenty-four leagues diſtant; and captain Campagnol, who was with the ſick on board the bark, away to ſea a conſiderable diſtance from the commander; this contrary wind which became more and more violent, toſſed them about nearly a fortnight, during which time ten or twelve bodies were daily thrown overboard, from the commander's veſſel, which had no longer any thing to eat on board, and very little to drink; ſo that without the interpoſition of the Almighty, who by earneſt prayer was induced to ſend a favourable wind, we were upon the point of caſting lots who ſhould be devoured by the reſt. After two days and one night in this condition, they arrived at the part of the town of Gueytarge to which the Biſcayan captain belonged, where they immediately obtained bread and water, through the medium of a French gentleman who was better provided than his companions, and who lent the commander money. It was ten leagues by ſea from there to Fontarabia, to which place the Biſcayan captain was ordered to conduct us; he however told the commander, that he had not determined to carry him any farther, but that he might go by land if he pleaſed; upon this the commander immediately gave advice to the governor of Fontarabia, informing him of the little reſpect ſhewn by the Biſcayan to the orders of the marquis of Santa Cruz, and that owing to his neglect his people were dying. Immediately upon this, the governor ſent a man to the Biſcayan, ordering him upon pain of death to proceed inſtantly to the village of Andaye, oppoſite to Fontarabia, there being only a ſmall arm of the ſea between, which ſeparates France from Spain. He accordingly immediately prepared ſloops and boats to carry the commander and his people to Fontarabia, and as they were paſſing this little arm, a Spaniſh gentleman came on the part of the governor, to offer to the commander proviſions, money, horſes, and cloaths, ſtating that he had directions from his Spaniſh Majeſty, to ſhew every kindneſs in his power to him, and to his people; the commander thanked him but accepted nothing of him, but horſes to tranſport him and thoſe who were the moſt ill to Bayonne, about ten or twelve leagues diſtant. At length they landed at the village of Andaye, on the fourth of October, where the inhabitants of the place ſeeing them arrive ſo miſerable and ragged, received them into their houſes and treated them in the beſt manner they were able; the next morning the greater part of them brought their mules, and aſſes, to carry them to the trembling bridge, three leagues from there; and ſome women

and girls of the place accompanied them, as in this neighbourhood they are very charitable. The commander as well received great kindneſs in this place; and accommodated in the hoſpital of St. Jean de Luz, which is adjoining, a great number of them; continuing to have others in the hoſpitals, and charitable houſes, along the road to Bayonne, ten or twelve leagues diſtant; where the greater part died; the others came as far as to the gates of Bayonne, to whom the captain gave ſix hundred crowns, to enable them to reach their houſes, which he borrowed, cauſing them to be accommodated with carts from ſpace to ſpace throughout Gaſcony, by the medium of Le Sieur de Paſſiere, governor of Bayonne, who furniſhed them with a commiſſary to guide them, and provide them quarters. The commander having thus provided for his people, took poſt at Bayonne aforeſaid to proceed to Paris, in order to render account of his commiſſion; and kiſſing the hand of the queen mother, from whom he had expreſsly received the orders for this expedition, he preſented her with an abſtract of this relation, adding, *Madam, I know very well that in relating my adventure, I muſt neceſſarily occupy too great a length of time upon a ſubject which can be but little agreeable to your Majeſty; I am extremely hurt Madam that my voyage was not undertaken with as much ſucceſs in its favour as I had inclination to give greater ſatisfaction to your Majeſty: You will ſee if you pleaſe Madam what has been dictated by truth in this paper; if you conceive that a fear for my own life can have made me forget for an inſtant the duty I owe your Majeſty, I bring you my head to anſwer for it.* To which her Majeſty replied, *Monſieur le Commandeur, I know you are too honeſt a man to have failed in your duty, I thank you for the affection which I know you bear towards my ſervice, and I reſerve to myſelf a good diſpoſition towards ſeeking the means of promoting your welfare.*

END OF THE FIRST VOLUME.

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